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BULLETIN OF THE

TAYLOR SOCIETY

A SOCIETY TO PROMOTE THE SCIENCE AND THE
ART OF ADMINISTRATION AND OF MANAGEMENT

FEB 14 1921

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After the Consulting Management Engineer Has Left the Job

A Formula for an Efficient Workman

Sales Organization and Methods

Why Men are Without Employment

Engineering Societies Building
29 W. Thirty-Ninth St.
New York

DECEMBER, 1921

VOL. VI., No. 6

TAYLOR SOCIETY

ENGINEERING SOCIETIES BUILDING
29 WEST THIRTY-NINTH STREET, NEW YORK

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BULLETIN OF THE
TAYLOR SOCIETY
A SOCIETY TO PROMOTE THE SCIENCE AND THE ART OF ADMINISTRATION AND OF MANAGEMENT
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COMMENT

THE registration at the annual meeting held the first three days of the month was 535, larger than at any previous meeting. In addition there was a score or more of casual guests at each session who did not take the trouble to register. Such an attendance in a time of industrial depression gives reason for gratification.

IT seems to be the judgment of those who were present that with respect to the content of the sessions the meeting reached a new level. Not all sessions were equally successful, but, considering the meeting as a whole, we believe that judgment to be correct. We predict that most of the papers, as they appear in the BULLETIN, will become the object not merely of casual reading but of study and discussion.

THE first session for sales executives was the least satisfactory of the sessions. It was least satisfactory in that the questionnaire upon which the report was based did not yield much information additional to that yielded by the questionnaire of a year ago. It did unquestionably yield *some* additional information, but it was evident that that particular approach to the study of the sales problem had been explored by the earlier questionnaire. These questionnaires having accomplished an extremely useful purpose—awakened sales executives to a thinking of their problem in the large—from now on the task of the sales sessions is to consider detail problems intensively.

TO the new president, Richard A. Feiss, and the new members of the Board of Directors, Ida M. Tarbell and L. Herbert Ballou, the members of the Society extend greetings, and to all the officers a promise of loyal support. For the officers of the coming year a new high mark has been set by the achievements of the past year. To reach that mark—and go beyond and set a still higher mark for the next year—will require all the resources of vision and energy possessed by an able Board and all the resources of loyalty and energy possessed by earnest members.

AND to the retiring president, Henry S. Dennison, and the retiring members of the Board of Directors, Daniel M. Bates and Frederic G. Coburn, and to the other officers who worked with them, the members of the Society express their gratitude. The past year has been one of significant achievement in the face of obstacles created by the industrial depression. At the beginning of the past year the Society was in the position of a regiment about to go over the top—or not. It went over the top through one trench after another; almost through the last trench to the open fields of mobile operations. The S. O. S. did effective work and the membership was increased nearly 60 per cent. The General Staff, the individual officers and the rank and file did effective work, and better meetings with high grade papers and discussions and a better BULLETIN were produced. The support of our allies was stronger—many of the papers and discussions were offered by non-member friends. As an educational and service institution the reputation of the Society was enhanced by a year of inspired leadership.

LEADERSHIP in a democratic institution does not mean the exclusive right to have vision and suggest policies and plans. It means simply that to certain individuals has come the responsibility of giving especial attention to these things for a period, and that in accepting leadership they agree to give attention to these things, arranging their other affairs, if necessary, so that they may give the necessary portion of their time to that which they have agreed to do. The members of the institution who have not at any particular moment been assigned the responsibility of leadership have an equal right to see visions and suggest policies and plans; they simply have no contractual obligation to assume that function as a responsibility and to arrange their affairs to make certain an attention to the responsibility. Every member of the Society, for instance, is now and then inspired by vision of what the Society can and should do—is inspired even to formulate in his mind specific plans for carrying out that which he has conceived. He has a moral if not a contractual obligation to bring these visions and plans to the attention of those who have been assigned the functional responsibility of leadership. The office of the Society should receive each year at least one unsolicited letter from each member concerning policies and plans, papers and discussions, services which may be rendered, deficiencies in meetings and in the BULLETIN, and other things which would be of great value to the Board of Directors.

IN the luncheon to Henry R. Towne, Honorary President of the Society, at the annual meeting in December, was achieved the desirable balance of simplicity, dignity and impressiveness in such an affair. The menu was simple and there were no decorations; the ballroom itself was sufficiently attractive. The addresses were not too numerous, not one was too long, and all were on a high plane. There were no false notes. The Society was honored by distinguished guests. When Mr. Towne arose to speak and after he had concluded, the audience arose in spontaneous, silent tribute to a distinguished man who had just related the story of his relations to another distinguished man whose name the Society bears. The most impressive moment was just following Mr. Towne's peroration. Mr. Towne's address, without notes, had gone forward so easily, so simply—he had displayed such quiet vigor—no effort, no fatigue—that the audience, notwithstanding the content of the story itself, could hardly realize that they were listening to a man who had known Mr. Taylor at the beginning of scientific management, who had had a vision of science in management while Mr. Taylor was a boy, who as a young engineer had worked on the building of the monitors which were used in the Civil War, and whose experience linked industry of the Civil War with industry of the World War. Then in his peroration Mr. Towne charged the members of the Taylor Society to hold high the torch of science in management which Mr. Taylor had raised, and, giving the impression that Mr. Taylor's voice from the grave was speaking to the younger members of the Society, recited the lines of Flanders Fields:

> Take up our quarrel with the foe:
> To you from falling hands we throw
> The torch; be yours to hold it high;
> If ye break faith with us who die
> We shall not sleep, though poppies grow
> In Flanders fields.

BUSINESS MEETING

IN accordance with the notice issued in the announcement of the December meeting, the annual business meeting of the Society was held Thursday afternoon, December 1, in the Engineering Societies Building. Some fifty members were present.

Following the call to order by President Dennison, the report of the Treasurer was presented, accepted and placed on file. This was followed by the report of the Managing Director, which was accepted and placed on file. Both of these reports are to be printed and sent to the members.

The Chairman of the Finance Committee stated that the report of that committee was included in the reports of the Managing Director and of the Treasurer. No reports were made by other standing committees.

Then followed the report of the committee which had opened and counted the letter ballots for officers for the year 1921-1922. This committee consisted of Miss B. Eugenia Lies, Miss Sadie Engel and Mr. Robert H. Wessmann. The result of the balloting was as follows:

For President:	
Richard A. Feiss	326
Scattering	7
For Vice-President:	
Robert B. Wolf	326
Scattering	7
For Treasurer:	
Edward W. Clark, 3d	331
Scattering	1
For Directors:	
Ida M. Tarbell	316
L. Herbert Ballou	307
Scattering	27

The officers were declared elected and President Feiss was called to the chair.

In accordance with a notice which had been given at the time of the call for the meeting, the Board of Directors presented for the consideration of the meeting the matter of the dues of Sustaining Members. The

Board believed the sliding scale now in force—$100 to $500, according to ability to pay—to be too high. After discussion of the amount which should be set as the dues of Sustaining Members, Mr. Carl G. Barth made the point that the exact amount is a detail which does not properly belong in the Constitution, and offered the following amendment to the Constitution: Voted, that that part of Article C11 of the Constitution, which reads "of a Sustaining Member, not less than $100 and not more than $500, to be determined by the Board of Directors and in accordance with the applicant's ability to contribute," be amended by dropping the words "not less than $100 and not more than $500," and the words "and in accordance with the applicant's ability to contribute," thereby making that part of Article C11 read "of a Sustaining Member, an amount to be determined by the Board of Directors." This amendment was carried without dissenting vote and, in accordance with Article C29 of the Constitution, is to be submitted to letter ballot.[1]

The election of a Nominating Committee for the ensuing year followed, the nominations being made from the floor in accordance with Article C23 of the Constitution. The following committee was chosen: Henry S. Dennison, Chairman; H. K. Hathaway, Henry W. Shelton, D. M. Bates, Miss Mary Gilson.

Under the item "General Business," Mr. Percy S. Brown, Groton, N. Y., made inquiry concerning the organization and functions of local sections, and particularly concerning the practicability of local sections in "country" districts as well as in the cities. An interesting discussion developed, but no votes were taken. It was suggested, however, that Mr. Brown prepare a statement for the BULLETIN and that the BULLETIN contain a section devoted to news from local sections.

In remarks prior to adjournment President Feiss stated that he appreciated the honor which had been conferred upon him, and that he would endeavor to increase the usefulness and influence of the Society along the lines marked out by his predecessor.

The meeting then adjourned to the next annual meeting, but subject to call in accordance with Article 27 of the Constitution.

THE PROBLEM OF LOCAL SECTIONS

PURPOSE, ORGANIZATION, ACTIVITIES

I. GENERAL

AT the December 1 business meeting of the Society Mr. Percy S. Brown, of the Corona Typewriter Company, Groton, N. Y., made inquiries concerning the organization and activities of local sections which developed an interesting discussion. Mr Brown inquired particularly about the practicability of local sections in "country" districts where the membership is scattered.

The Board of Directors has not adopted a definite policy concerning local sections and has not formulated definite regulations governing their relations to the national organization. With respect to policy the attitude of the Board has been, not to attempt to stimulate the organization of a local section where a local desire for a section has not been manifested, but where such a desire for a section has been manifested to help in its organization and activities in every practicable way. The principle at the basis of this attitude is that a section having its origin in other than a local desire for a section is likely to be artificial and not enduring.

With respect to regulations governing the relations of local sections to the national society, the following informal advice has been sent to each local group about to organize a local section:

1. Only members of the national society shall be *members* of the local section;

2. All members of the national society residing within the local section area are automatically members of the local section, except those who decline to accept such membership;

3. The local section should have a minimum of administrative machinery;

4. The local section should not establish dues which would add to the financial burden of membership in the national society, but should endeavor to get along with pro-rata assessments to cover actual expenses;

5. Non-members should be invited to attend section meetings as guests;

6. The principal objects of the local section should be:

a. To promote studies of management problems and methods more detailed and more related to local industries than is possible in the larger meetings of the national society;

b. To discover papers based on the investigations

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[1] This amendment was submitted to letter ballot in Dec., 1921, and adopted by the following vote:

Number of votes necessary (a majority of the voting membership)	325
Number of votes cast	386
Of the votes cast:	
Necessary for choice (two-thirds of the votes cast)	258
For the amendment	383
Against the amendment	3

and experiences of section members which deserve the wider publicity of presentation at meetings of the national society;

c. To provide a constant education of beginners in the principles and the standard practice of scientific management;

d. To interest non-members in the work, and in membership in the Taylor Society.

The above advice to organizers of local sections has been informal, for the reason that it has been the opinion of the Board of Directors that the formulation of permanent, standard instructions should await actual experience in the work of local sections and that these standard instructions should then be prepared by a committee of experienced officers of local sections in conference with the Managing Director.

The time seems to have arrived when a definite policy and definite instructions covering the organization and activities of local sections, and their relation to the national society, should be prepared. As a first step in that direction Mr. Brown has been asked to present the views expressed by him at the business meeting and each secretary of a local section has been requested to make a general report of experience to date. On the inside front cover of this issue will be found a list of the officers of local sections.

II. A PLAN FOR LOCAL SECTIONS

By Percy S. Brown, Corona Typewriter Co.

General. In the larger cities it is a simple matter to organize local groups comprising members of the Taylor Society. The very fact that the members are located in one city facilitates organization. In the purely rural districts no advantage exists, and because of the fact that so many factories are located in sections which are not purely industrial sections, such factories are more or less isolated and their organizations have difficulty in keeping a point of contact with other progressive organizations. The suggested plan proposes in a very general way, a solution to the problem of the factory located in the village or small city where a larger city is situated at a central point. It is hoped that the plan, which is merely a skeleton one, may prove a basis for development into a definite standardized plan of the Society.

Local Sections. The local section should be identified by name, such, for example, as Philadelphia Section, New York Sections, etc., where limited to a city; while if built to embrace a number of counties, it should be known as the Central New York Section, Northern New Jersey Section, etc.

The local section should limit its active membership to Honorary, Senior, Associate and Junior members of the Taylor Society in good standing, and its affiliated membership to representatives of sustaining member firms, these representatives to have all the rights and privileges of active members, except the privilege of voting or holding office. It should be further provided that all meetings are in the nature of an open forum, but because of the very nature of the sectional organization, attendance at the meetings should only be by invitation of members. (See *Meetings.*)

Each sectional group should have as its officers a President (or Chairman), Vice President (or Vice Chairman), a Secretary and Treasurer, together with necessary standing committees, such as, meetings, papers, etc. The Secretary should be a salaried official, receiving a sufficient compensation to cover stenographic and clerical service. In all probability a Secretary would be a man active in industrial affairs who could use the part time of a stenographer and who would desire no compensation for himself. Probably fifty dollars per month would cover this item.

Dues. Inasmuch as membership in the local sections would be determined by membership in the Taylor Society, the local sections would merely have to establish nominal annual dues. The suggestion is that at the outset the dues be placed at ten dollars per annum for all except sustaining members, and that for sustaining members it be set at twenty-five dollars.

Meetings. The primary object of the meetings is to promote informal discussion of all matters of interest to the members. The suggestion is that meetings shall be preceded by informal dinners, following which, such papers as have been prepared for the meeting will be read and generally discussed. The plan is particularly advantageous where the meetings bring together representatives of industry from outlying sections, as they become more closely acquainted thru the informal dinners. Another advantage is that there is no expense involved for a meeting place, the papers being read and the discussion held in the dining room. The dinners, of course, would be paid for by all members and guests attending. (This explains why attendance should be limited to members and guests, as the Secretary would have to have notice in advance so as to know what arrangements to make.) The plan might, of course, be modified to permit non-members attending after the informal dinner, but this is a detail that would be worked out at a later date. It is further suggested that regular meetings be held monthly and that during the late spring, summer, and early fall months, meetings should be held at various industrial plants where a thorough plant inspection could be made by members, the plan of organization explained and general discussion take place. This has been done successfully by other organizations and has been found to be of great value.

Specific Proposal. It is specifically proposed that the formation of a Central New York Section be undertaken with Syracuse as a hub and general meeting place. It is proposed that this organization embrace the territory of which Pulaski is the northern point, Utica the eastern point, Ithaca the southern point, and Geneva the western point. This would give a territory embraced by a radius of about fifty miles from Syracuse. The others sections of New York State would be left open for the organization of an Albany District, and a district centralized at Binghamton and embracing what is known as the southern tier of New York State, and the northern tier of Pennsylvania, as well as Rochester, Buffalo and Southwestern New York sections.

It is not proposed to specifically limit any section to a given territory as it is very possible that there are many instances where prevailing conditions are such that what might look like a logical arrangement would prove disadvantageous.

Advantages of Section Organization. Theoretically, at least, the organization of local sections would promote interest in the Taylor Society and materially increase its membership. Furthermore, many valuable papers will be presented and there should be an understanding that all written papers presented at regular sections meetings should be forwarded by the Secretary to the Managing Director of the Taylor Society for publication in the BULLETIN, if desired, and that if not published they will be returned to the writer of the paper, the Society waiving all rights. It is to be expected that much valuable data will be brought forth through the sectional meetings.

Conclusion. The primary object in organizing such groups should be the up-building and strengthening of the Taylor Society as a national organization, and nothing should be undertaken by local sections that would in any sense act adversely to the interests of the national organization.

All local section activities should be subject to laws established by the national organization for their guidance.

The foregoing is merely an outline of a plan, very general in its nature, and is submitted primarily with the idea of promoting consideration and discussion of the subject, to the end that the Taylor Society may increase its membership, activities, and constructive value, through the creation of groups of members in all parts of the country.

III. THE NEW YORK SECTION

W. H. Leffingwell, Robert H. Wessmann and Francis Goodell,
Committee

ORGANIZATION

This section was organized June 1, 1920, at a luncheon held at Keene's Chop House. A temporary committee was appointed to handle the affairs of the section until experience should indicate the nature of the desirable permanent organization. The permanent organization has not been effected.

A questionnaire sent out at the time of organization to members of the parent society resident in New York and the suburban towns yielded the following information: monthly meetings; on a Thursday evening; with dinner; to be a "forum for the discussion of management problems in their general aspects." At the first meeting it was decided that funds for printing, postage and other general expenses should be provided by the addition of sufficient amount to the cost of each dinner.

MEETINGS

Beginning in September, 1920, meetings have been held as follows: Sept. 16, John H. Williams, "Fundamental Principles of Scientific Management;" Oct. 21, H. K. Hathaway, "Establishment and Maintenance of Standard;" Nov. 18, William O. Lichtner, "Job Analysis and Time Study;" Dec. 16, Frank B. Gilbreth, "Central Planning and Control;" Jan. 20, 1921, Informal Social Meeting; Feb. 17, Harold M. Davis, "Records of Progress;" May 26, H. G. Cobaugh, "Balance of Stores Methods;" June 16, Henry S. Dennison, "Personnel Relations under Scientific Management;" Sept. 15, Frank B. Gilbreth, "Micro-motion Study for Current Use;" Oct. 20, Harry A. Hopf, "Equalization of Salaries of Administrative Employees;" Dec. 15, George Soule, "A Joint Accounting Survey as a Basis for Wage Determination."

PROBLEMS OF A LOCAL SECTION

Two of the chief problems of a local section are, to determine what should be the *purpose* and what are its *opportunities*. It was thought that these questions were answered when the replies to a questionnaire were summarized at the time of organization of the New York Section. However, comments upon recent meetings, and letters received from members, have raised a doubt in the minds of the committee, whether or not the section is meeting the needs of the majority of the members. To settle this doubt another questionnaire is being prepared along the lines indicated below. The result of this questionnaire will be discussed in a later issue of the BULLETIN. For the present it is better simply to mention the content of the proposed questionnaire, as indicative of unsolved problems.

1. Time and place of meeting:
   How often shall it meet?
   What day or days?
   What time of day?
   Shall the meeting be preceded by a luncheon or dinner or not?

The original decision of the New York Section was a meeting once a month, on Thursdays at 6.30 P.M. with a dinner. A falling off of those attending dinner and an increase in those attending after the dinner is perhaps an indication that the majority of members no longer desire the dinner.

2. Subjects for discussion:
   Shall the papers be on technique and appeal primarily to the engineers?
   Shall they be on principles and elementary technique to educate new members and persons not well acquainted with scientific management?
   Shall they be on general social and economic problems and appeal to all classes?
   Shall one or more than one paper be given at a meeting?
   Shall discussion be prepared or informal?

Judging by the reaction to meetings already held, the committee is inclined to believe that two papers should be given at each meeting, the main one on broad general phases of management, and a shorter one on advanced technique.

3. To whom shall the section appeal?
   Advanced engineers?
   Junior engineers?
   Executives?
   General public?

The fact that the attendance during the last year has been at least half non-members raises the question whether our appeal has been rightly directed.

4. Method of financing:
   Shall members be assessed extra dues to support the local section? If yes, how much? Shall an extra tax be added to the cost of the dinner? If so, how about the people who come after the dinner?
   Shall admission be charged?
   Shall a few loyal members be expected to meet the expenses?

The New York section has tried various of these plans but has not hit on the right one. At present the burden is falling on a few members.

There are other problems but these are the main ones which our experience shows should be considered when a local section is being organized.

IV. THE PHILADELPHIA SECTION

Henry Wood Shelton, Secretary

ORGANIZATION

This section was organized in December, 1920. In October, 1921, it became affiliated with the Engineers' Club of Philadelphia, an affiliation which gives the section the advantage of a regular place for meetings.

During 1921 six meetings were held at which the following papers were presented: Jan. 1, Richard A. Feiss, "An Engineering Approach to the Problem of Continuous Employment;" March 15, C. M. Ford, of Eaton, Crane & Pike, "Recent Developments in Stores-Keeping Technique;" April 11, Reginald A. Spaeth, Johns Hopkins University, "The Relation of Time Study to Industry," and Carl G. Barth, "Time Study With a Stop Watch;" May 9, John W. Carter, Tabor Mfg. Co., "Routing;" October 24, John H. Williams, "Cost Accounting From the Engineering Standpoint;" Nov. 28, Dr. Ira N. Hollis, President Worcester Polytechnic Institute, "Waste and its Relation to the Industries."

PURPOSES AND OPPORTUNITIES

Aside from the general purposes in common with those of the parent society, the local section has in mind the following:

1. Increasing knowledge and standing of the Taylor Society in this community by regular meetings of local interest;

2. A gradually increasing membership rising from this increasing local interest;

3. Better acquaintance and closer relations of members in this locality;

4. Inspiration of younger members, and their education in the history of the scientific management movement, and of present work being done on various technical problems;

5. Fostering better mutual understanding and cooperative effort among various groups in the community, especially the organized employer, the organized employee, and the engineer;

6. Discovery of new contributions to the art and science of administration and management.

PROBLEMS

1. *The financial problem is the most outstanding.* It has been met hitherto by voluntary contributions of members in varying amounts based on circular letter solicitation. Thus far the returns from these letters have been enough to meet the needs of the section. A large part of the actual expense, however, such as the work in the secretary's office, has been contributed.

2. *Worth while programs.* The effort has been primarily to have programs which would attract sufficient interest in the community, and prove of local service, although generally bearing on some national problem such as "Elimination of Waste," "Hospital Administration," etc. Whatever success we have achieved in this line has been largely due to the chairman's wide acquaintance and catholic interests.

3. *Attendance.* This has averaged about one hundred. From one to four thousand notices are printed for each meeting. In order to circularize a large number of people we get in touch with the secretaries of various organizations that would probably be interested in the meeting, tell them about the program, and ask if they would like to enclose announcements of our meeting with any material they are mailing to their own members. In this way a large number of people are circularized at a minimum of expense to the section.

4. *Education of younger members.* This has not been definitely attacked. The suggestion has been made that the regular meetings be supplemented by a weekly or bi-weekly gathering for the informal round-table discussion of particular technical topics. It is expected that these would be lead by one of the older members, but largely attended and participated in by younger members.

RULES, REGULATIONS AND PROCEDURE

Other than the general rules laid down by the Managing Director when our section was started, I question the advisability of standard rules for local sections. The problems which each has to meet are peculiar to its environment, and there should be local autonomy and flexibility of method. The movement, however, to have local sections report through the central office in order that all sections may gain by the recorded experience of each is most salutary. The more fully this can be achieved, the greater the value. Otherwise, however, each local section should, in my judgment, work out its own salvation along its own lines of maximum service to its constituency.

V. THE NEW ENGLAND SECTION

Henry H. Farquhar, Secretary-Treasurer

ORGANIZATION

This section was organized in April, 1921. It covers the six New England States and has over 150 members and nearly sixty officials designated by thirteen Sustaining Members. Dues are $1.00 per year.

Meetings have been held as follows: April 1, Organization Meeting; May 6, "Symposium on Scientific Management," led by six designated members; Nov. 10, Henry S. Dennison," Sales Engineering;" Dec. 16, Fred J. Miller and A. T. Simonds, "Discussion of the Report of Hoover's Committee on Waste."

Without presuming to speak for the section or its officers as a whole, the following is offered from the standpoint of the Secretary-Treasurer of this section:

PURPOSES OF LOCAL SECTIONS

1. To spread appreciation of the objects, principles and methods of scientific management throughout a larger audience than can be reached by the parent society, particularly as regards the younger men;

2. To awaken an interest in the parent society to a point of membership;

3. To provide an outlet for presentation of constructive work not provided by parent society, but which might well be published in the BULLETIN;

4. To discuss local problems not of particular interest to the membership at large;

5. In general it is felt that subject matter particularly suitable for presentation before the parent society should not be made a feature of section meetings—in other words, that matters of national interest should ordinarily be presented at national meetings — while local meetings should be confined primarily to discussion of local matters, or at least to a follow-up of the details of any paper presented before the parent society. The national meetings should lead the way in advanced practice; the local meetings should make more general the knowledge of good practice already accepted by the national society and fill in the gaps by details of the leading papers presented at the general meetings.

PROBLEMS OF FINANCE

It is felt that the largest possible publicity should be secured. With a mailing list of 600, two notices (advance and follow-up) for each of say six meetings per year, with distribution of abstracts of each meeting, calls for over $100 in postage alone. To this must be added printing expenses, clerical labor, the purchase of stencils for addressing, sometimes traveling expenses of speakers, and miscellaneous. A membership of 200 with $1.00 dues, even assuming that everyone paid, will barely cover such expenses. As a matter of fact, we have received dues from only a little over half of those eligible for section membership.

To keep up this publicity means either

1. Raising the annual dues, or
2. Securing funds by other means. This raises the question of membership.

PROBLEMS OF MEMBERSHIP

The question must be raised as to just whom the section membership should embrace. We have billed regular members of the society and designated officials of sustaining members (not themselves members of the parent society). Should the latter be billed? If not, or if so, should sustaining members be billed for dues in excess of the regular $1.00 yearly fee which we have established?

What may be done toward affiliating with the local section non-members of the parent society? There are a number of such men who regularly attend our meetings and who receive all the service, with the exception of receiving free abstracts, which is given members, yet who may not contribute even if they wished to without joining the parent society. Could they in some manner be attached first to the local, help sustain it and thus be led eventually to join the national? As matters now stand, they have little incentive for joining the society because they receive now practically all the regular member receives. If such men cannot be permitted to affiliate with us, in what way may our activities be financed, and what differentiation may be made between members and non-members?

VI. THE CHICAGO SECTION

Emil J. Schmidt, Secretary

A meeting for the organization of a Chicago Section of the Taylor Society was held Nov. 28, 1921. Seventeen members of the parent society were present. A temporary organization was effected and plans made for meetings and papers during the coming year. The program of the first regular meeting, to be held at an early date, will consist of a paper by Mr. Hugo Diemer on Taylor principles and the history and development of the Taylor Society. A truly admirable spirit is being manifested in the effort to develop an active, worthy section of the Taylor Society.

WE were reading the "Autobiography of Benjamin Franklin" the other day and came across the following observations of that wise philosopher, scientist and statesman.[1] Substitute "machine-shop work" for "shipbuilding," "machine" for "ship," "belting" for "sails," "disposition of materials" for "disposition of lading," and so on, and it might have been written by Taylor shortly after he entered Midvale in 1880—so accurately does it picture the mental attitude which led to scientific management.

> It has been remarked as an imperfection in the art of shipbuilding, that it can never be known, till she is tried, whether a new ship will or will not be a good sailer; for that the model of a good-sailing ship has been exactly followed in a new one, which is prov'd, on the contrary, remarkably dull. I apprehend that this may partly be occasion'd by the different opinions of sea men respecting the modes of lading, rigging, and sailing of a ship; each has his system, and the same vessel, laden by the judgment and orders of one captain, shall sail better or worse than when by the orders of another. Besides, it scarce ever happens that a ship is form'd, fitted for the sea, and sailed by the same person. One man builds the hull, another rigs her, a third lades and sails her. No one of these has the advantage of knowing all the ideas and experience of the others, and therefore, cannot draw just conclusions from the combination of the whole.
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> Even in the simple operation of sailing when at sea, I have often observ'd different judgments in the officers who commanded the successive watches, the wind being the same. One would have the sails trimm'd sharper or flatter than another, so that they seem'd to have no certain rule to govern by. Yet I think a set of experiments might be instituted, first, to determine the most proper form of the hull for swift sailing; next, the best dimensions and properest place for the mast; then the form and quantity of sails, and their position, as the wind may be; and, lastly, the disposition of the lading. This is an age of experiments, and I think a set accurately made and combin'd, would be of great use. I am persuaded, therefore, that ere long some ingenious philosopher will undertake it, to whom I wish success.

TO executives whose responsibilities include the direction of their business—the determination of future policies and plans—the following publications should be of especial interest:

"Price Changes and Business Prospects," by Leonard P. Ayres, Vice-President, Cleveland Trust Company. Published by The Cleveland Trust Company, Cleveland, O.

"The Business Cycle"; reprints of a series of articles which appeared in the Financial Supplement of the *New York Evening Post;* the first part dealing with the theory and principles of the cycle, the second part with practical applications of the principles, the third part with the present position of the country in the business cycle. Published by he New York Evening Post, 20 Vesey St., New York.

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[1] Harvard Classics Edition, pp. 163-4.

AFTER THE CONSULTING MANAGEMENT ENGINEER HAS LEFT THE JOB[1]

SOME REFLECTIONS OF A MANAGER ON THE MAINTENANCE OF STANDARDIZED METHODS UNDER VARYING OPERATING CONDITIONS

By Charles F. O'Connor[2]

THE mind of the speaker—quite selfishly perhaps—has been dwelling upon a question raised at the Springfield meeting of our Society as to whether we were professional or business men when talking in terms of membership in the Taylor Society. Holding firmly to the opinion that we are two-fold in number, professional and business (the professional element being made up of those who by study and experience develop the science of management; the business element, on the other hand, composed of members who are managers of going concerns), it is my opinion that as a Society we ought to be giving some thought to those plants where the installation of scientific management has been made and which, because of the daily stress and strain, are apt to wander away from definite principles. Therefore in my thesis today I am talking for the business element of our Society, who I feel if neglected will be fed by extravagant and false claims and thus stray from the principles laid down by the profession. In other words I want to consider today the position of the Production Manager after the engineer has quit the job; I want to put to the Society the question whether or not it ought to consider more effective means for securing "an understanding and intelligent direction for the benefit of that manager."

2. Let us consider an installation of scientific management. An engineer makes the installation and from among the employees, or from outside, an assistant to the engineer is selected through whom direct application of the full theory is made. When the period of development is finished the engineer leaves the job with this assistant in charge as production manager. For a time there is intercourse between them, but new fields of endeavor lead the engineer away and short-sighted business policies do not arrange for keeping the engineer in touch with the installation as an advisor. The manager, meantime, is carrying on the work laid out by the engineer. As in all construction work, superstructure has been created which at some time or other must be done away. When this time of diminishing return has been reached; when theory becomes practice; when, for instance, an accumulation of records such as premium records have reached a point that enough data are secured, the danger point for the manager is present. What can he safely do away with? What should he maintain and how much? The forces which are prevalent in all installations make themselves felt at this time. Those who are not for the installation feel the time has come when much can be thrown into the discard. They mistake the doing away with superstucture for an admission that much more can be done away with; they do not distinguish between structure and principles. If not quite so drastic they are seized with a mania for suggestion. Can we not minimize on our symbolization? Are we not fooling ourselves in centralizing this and that function? Such are the thoughts and well-intentioned remarks of the skeptic. The more strenuous go so far that if the non-fulfillment of a promise date for delivery to a customer is encountered, it is the fault of the planning department that material is not on hand, though freight embargoes are the leading topic of discussion in all newspapers. Or if priority rulings make shipments impossible the sales department looks to the planning department for special freight trains. The system, as they are wont to call it, provides against all this, and, to cite a change of a physical nature, war conditions may conspire to the effect that lack of storage space results in the diminution of our double bin storage layout. The management at this stage is confronted with

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[1] A paper presented at a meeting of the Taylor Society, New York, Dec. 2, 1921.

[2] Production Manager, Universal Winding Co., Providence, R. I.

the task of ameliorating conditions—a state of mind dangerous for the manager.

3. This, I believe, is not an overdrawn case, but as a Society we must remember the installation is known as a Taylor one, and the operation of that plant whether successful or no is spoken of in terms of a Taylor installation. If, therefore, business policies do not arrange for the retaining of the installing engineer on the business staff, because we are all pioneers this Society must arrange for a clearing house so that the manager can be guided by the experience of others in resisting some of the forces mentioned above. That is the problem I would lay before you today. Admitting for the moment that an installation with no superstructure has been made, we have, in time at least, an element of progress which calls for some change, some improved appliances which ought to be adopted in that installation, so the manager of such a situation must be kept posted in a definite way if the installation is to be looked upon with pride.

4. Allowing for the moment, whether right or wrong, that such a production manager as I have drawn exists, where can he turn for concrete examples and possible solutions of some of his problems? For instance, if that bug-a-boo "overhead" is presented, and the manager is seeking economy by installing office machinery, where can he find the experience of others who have attempted an installation of tabulating machines? Of if his Balance-of-Stores department has grown to such a size in personnel that bookkeeping machines interest him, to whom can one turn to learn the pitfalls and snares to be avoided? Have we thought far enough in our standardization so that many of our forms of issues, manufacturing orders, etc., could be printed in national houses and thus help in economizing?

5. In suggesting these thoughts it is recognized that as a Society we may not desire to put ourselves on record as favoring this or that method or appliance where both are equally desirable, but in our Society there should be a record of them as possibilities. I mean that the Society should make a special effort to educate the manager along the lines of finding out where he can get assistance which he needs.

6. As a further illustration of my thoughts permit me to give concrete examples of what I have in mind. The firm I represent is a manufacturer of textile machinery. Since the installation of scientific management there have been two production managers, and my tenure of office is passing through the phases cited above. It has been found that to operate without scientific management would have meant consternation during the flood periods of the past few years; but it was found during those periods, however, that we had, many, many times to short-cut, as we call it, planning department routine in order to rush through special manufacturing orders; speed, not costs, was the dominant factor in our daily life. so that it was necessary to eliminate planning department time in our scheduling. So much became exceptional that your speaker feared often our lack of pre-planning might cause a stoppage. But by the same token we overcame obstacles, and it is the recording of these methods or operations and similar ones that I believe ought to be done by this Society. Surely it will help many a perplexed manager to check up and, at the same time, enable another to set himself right.

7. As a beginning of accumulated data I offer the following covering three problems with which we have been confronted; route sheet posting, material moving and balance sheet posting.

ROUTE SHEETS

8. Four years ago our system of route sheets was as follows: They were kept in files similar to the files which have been used in the balance department up to the present time. All move slips, foreman board slips, etc., which were to be kept as a matter of record while the lot was in process, were filed in pockets on an inserted sheet in these route sheet files. There were several disadvantages to this method, for the files were heavy and awkward to handle. It was necessary as a rule to take out a file, find the sheet, make the entry, replace the file and proceed with another one which made indexing very slow. Moreover, the method of putting these files together made it possible for them to fall apart, no matter how much care was used. If a file should drop to the floor the sheets would be scattered and all the slips mixed up, necessitating a long time in putting it back in its original condition. The filing of slips in pockets as above mentioned made the files heavier and more cumbersome, and made it practically impossible to find a slip on a given item without looking through all the slips with the same charge symbol. This method also made it difficult for a number of people to work at the same table, since the files took up so much room and the nature of the work made it necessary to be constantly taking them out and putting them back.

9. This arrangement resulted in the recorders becoming so numerous that the department became top-

heavy. We just had to cut down personnel. Consequently, there was evolved a visible index route sheet which is a Rand file laid flat on a table. We have at this writing two tables 16 ft. long and about 3½ ft. wide. One of the beauties of the system is the amount of space each man has for his work, for one side of the table containing approximately 400 to 500 route sheets is a fair amount of work for a man to handle under normal conditions. Consequently, with two tables we have four people where formerly there were twelve. It is safe to say that the tables have added 300 per cent to the efficiency of our route sheet clerk, as well as giving a very substantial saving in floor space. As a matter of fact, the duties of a route sheet clerk are broader in most respects than they were three or four years ago, for he is a material chaser as well as a route sheet clerk. The foreman board slips and move slips mentioned in the preceding paragraph as being kept in pockets in the old files are now filed in compartments or drawers built in the tables. Being filed there numerically and by operation, it is very much easier to find them than formerly. Another feature which we have recently adopted is the filing of third pocket machine box cards in a similar manner. Up to a short time ago these cards were kept in the machine boxes, and in certain cases—such as the punch presses where the operations are quick—a great many cards have to be filed together, making it consequently difficult for a route clerk to find the one for which he is looking. As we are filing them now by symbol and operation instead of machine, it speeds up the work greatly and makes it possible for the clerk to do practically all his work on his particular side of the particular table. Formerly the number of pieces finished on a given operation was put only on the inspection slip. As this inspection slip in the case of premium or piece work goes to the time department and is filed by days instead of by part number, it was very difficult to trace back in case it seemed necessary; so the practise was adopted of copying the number of pieces finished from the inspection to the foreman's board slip, then the board slip, which we have always kept filed until the lot was closed out, served as a record of that number of pieces and saved us the trouble of digging through hundreds of inspection slips to find the one required.

10. About four years ago a system of control sheets was started which supplement the work of the route sheets and give in graphic form the conditions of all the lots of every item. Theoretically this proposition seemed to be valuable, as a great deal of information could be obtained from these control sheets, and items that were not receiving the proper attention and therefore falling far behind schedule for any reason could be detected. However, with greater efficiency on the route sheets due in part to the changes outlined above, and due in part to the education of the clerks employed at this work, we found an expensive duplication was taking place and that the information we obtained from control sheets could be as easily obtained from the route sheets. While it was not in graphic form, this was offset by the fact that it was supplemented by the knowledge of the man who was handling the items. We have helped in depicting this information by inserting the date on which a given lot of a given item reaches a department. This is entered by the route clerk on the return of the move slip. In checking over the items under his supervision when the same are actually working in the shop, he places a check mark beside that operation, thereby giving the two essential facts: the length of time that the pieces have been at that operation and whether the work has yet commenced. From the nature of our business, in the case of a great many items it is necessary to work faster than this, but for routine work on standard pieces the method has proved to be of great value.

MOVES

11. There is probably no part of our system which has suffered so much criticism and received so many suggestions for change as the moving of material in the shop. We are all agreed that the moving of finished material should be as instantaneous as possible, and therefore our efforts have been directed to this end. Although we allow on our schedules one day for moving from department to department, from the nature of our business and from the extraordinary conditions which we endured during the year 1920, it was necessary to expedite the moving. With the start of the system there were several causes of delay which could be enumerated as follows: First, the board slip and time card were sent to the window to be changed; then there would be a delay while the window clerk sent the inspection to the foreman who entered the number of pieces finished on the same and returned it to the office. Then the various board slips and inspection slips had to be sorted, matched and delivered to the route sheet clerks who would enter the number of pieces finished on the route sheet, make out the move and place it in a box to be collected by our chief moveman. The chief moveman would then return the moves to the

shop, make his distribution to his various men, who would start from a central point, make the necessary moves, return the signed slips to him, who in turn would bring them back to the office. As noted above, with one day allowed for this procedure on our schedules in ordinary cases, it worked well enough, but was not suitable to cope with an emergency. We have, therefore, made modifications as follows: Our movemen at present are distributed two in each department and two circulating men. During the period of a large amount of work in the shop we add a man at the weakest point, but the above represents normal conditions. While the chief moveman has been retained, the work has been decentralized to a certain extent. In each department there is a shop clerk whose duties are to sign for, place and keep a record of all departmental materials. When a move is sent from the planning department to the shop it rests in the hands of this clerk. The movemen in the department take care of moves in the department and on the same floor, being directed by the clerk. And when a circulating moveman arrives in a department he reports to the shop clerk, who has authority to give him a return load. Meantime the chief moveman is circulating among the departments both from a standpoint of supervision and rush moves. So far as the trucking end is concerned, the present method seems entirely satisfactory. To expedite the clerical end of the work, as noted in a previous section on the route sheets, we have adopted the practise of accepting the board slip with the number of pieces finished entered thereon as a basis for moving, provided this amount checks with that obtained on previous operations. This eliminates a part of the delay; namely, the waiting for the inspection slip to go out to the foreman and be returned, and the matching with the board slip which was formerly necessary before an entry could be made and the move made out. Our normal time of moving therefore has been considerably reduced, and particular attention has been paid to a machinery for making instantaneous moves on shortage items. Our latest and most effective method is as follows: A red tag is placed in the box or boxes containing the pieces, with the operation and machines to which the part is routed listed on the tag. The finishing of an operation on an item accompanied by this tag means that the clerk in that department should instantly write a move and have the box delivered to the next operation. The clerk in that department has the responsibility of seeing that that operation is immediately started. In this manner the item is carried through the various operations to the inspection job, and when ready it goes to the finished storeroom. If it is an item for which there is an assembly shortage, it is delivered direct to the clerk on the assembly job, who turns the inspection slip and any surplus pieces over to the storeroom, thereby completing the transaction and preserving the accuracy of our accounting. The defect in this procedure would be the frequency of red tags. We have sought to overcome this by concentrating the placing of those tags on the work with our chief production clerk, and to date the system has worked out very nicely.

12. It has always been a sore point with the foreman that the truckers were not under their control but under the control of the planning department as represented by our chief moveman or the shop clerks. To keep our records straight and prevent the temporary and permanent loss of pieces, it is necessary that the planning department through the shop clerks have a record of each move; therefore, any departure from our layout which does not leave us covered in this way means more time to straighten the items out later on. At one time we were so hard pressed on moves that we began using a blue-printed list of all machine assembly shortages as nearly as could be estimated in advance during a current month. This list was given to the foremen as well as to the planning department men, and the general foremen were given truckers so that they could move the items on the list without waiting for them to go through the routine. As was expected, there was considerable trouble because of the two systems of moves working simultaneously, but the good result obtained was that this plan brought about a better understanding between the foremen and the planning department than we had ever had before. Each appreciated the difficulties under which the other was laboring. The foremen saw more clearly the necessity of keeping our records correct, and the planning department saw the necessity of moving instantaneously on the completion of an operation. This last is recited here just to show how far we had to go to effect what was demanded. Nothing we had gave the instantaneous relief desired, and we adopted a method. We realize the solution found was not the best but it met a situation, and if a better solution had been found and was available in the records of our Society, it would have been of great value at the time. As an apt illustration this serves to show that we production managers must meet critical situations; but in making adjustments it is our responsibility to see that Taylor principles are not "swept by the board."

BALANCE DEPARTMENT

13. For many months we concentrated on an effort to place our balance sheets on machine tabulators. We are pleased to be able to go on record as agreeing to the sentiments expressed by Mr. C. Moffitt Ford at the Philadelphia Section meeting when he said, "the utilization or non-utilization of unit posting media might mean the difference between the success or failure of the entire system." But our efforts in this direction brought us in touch with a rapid index file which paid for itself in a year's time. This file permits the use of a sheet 11 inches wide by 11¾ inches deep in place of the old sheet which measured 19¼ inches wide by 14 inches deep. The complaints against the old sheet were identical with the route sheet: bulky, cumbersome and lack of space to permit more than one person using one file at a time. We have now ten flat panels on a stand which permits the taking out of each panel separately, and in which panel are fifty balance sheets. Its rapid reference facilitates the posting of issues, permits more than one person access to information at the same time, and is a great saver of both time and floor space. The balance-of-stores clerk can post issues without having to go from his desk to the file rack and back again, since the stands allow for the carrying of same on a desk. Thus far we can definitely say we operate with two less balance clerks. It is an adapter for our balance sheets that has met with approval by all who have seen it.

14. If this paper has made clear my thought, you are visualizing these problems as coming from a plant operating under the Taylor plan of scientific management; therefore, they are practical—not theoretical—problems. This is a feature in which the business element of our Society at least is especially—yes selfishly—interested. You are visualizing, too, a production manager struggling to maintain the good work begun by an experienced engineer. That manager is apt to be blinded by the narrowness of the confines of his own business; but for us the future of the installation is in his hands. You will see the necessity of pooling all the experiences of installations; you will want a record of the effective and efficient changes made in the actual workings of our principles; you will see to it that through no lack of interest on the part of our Society shall a Taylor installation cease to be a scientific layout; in short, there must be the strongest kind of a tie-up between the two elements of our Society if the installations already made are to be criteria for future ones, because to use an old expression "a chain is no stronger than the weakest link."

DISCUSSION

Carl G. Barth[1]: Mr. O'Conner's paper, which I had the privilege to see in advance of its reading, calls attention to a perfectly natural and unavoidable condition in the life of any man-made institution.

It is an indirect statement of the fact so often laid stress upon by Mr. Taylor himself, viz; that while the principles of his system of management were essential, yes even perhaps as immutable as the laws of nature, the detail mechanisms he had to date developed for the conveyance and application of these principles for the attainment of the results aimed at, were necessarily subject to continual, if not continuous, growth and change. He laid such stress on this as to express the opinion that not a single one of his details, either paper forms or mechanical contrivances, would be in use ten years after he handed them over to myself and my co-workers.

Because Mr. Taylor invariably insisted upon the use of such forms and contrivances as had been developed by him and his co-workers up to a certain time, until the members of a new organization should have become thoroughly familiar with these, his "System" undeservedly got the reputation of being an uncompromising and rigid code for the alleged cure of the most glaring ills of any industrial concern. It must be admitted, however, that Mr. Taylor, in at least one notable instance, tackled the reorganization of a company with a mistaken idea of the essential nature of its business, which needed far-reaching modifications of some of the methods of control and cost finding that he attempted to apply in the beginning. However, none of the modifications that were finally developed did in any way go contrary to his essential principles—indeed, it would have been impossible for them to do so.

In the same manner Mr. Taylor's reputation for not even tolerating that a workman should think, but wanting him implicitly to follow instructions only, is due merely to a judgment of a whole by a misunderstood portion of it; for, whenever a workman had learned to obtain the results known to be possible by an implicit following of a set of instructions, Mr. Taylor even insisted on a special reward being given him for any suggestion that would lead to improved instructions and better results.

Mr. Taylor's whole spirit was that of continued progress, but by evolution only and not by revolution; and he again and again warned his disciples to remember that his system was an evolution of years and *not a brilliant invention* either on his own part or on that of anybody else.

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[1] Consulting Engineer, Philadelphia.

As another conspicuous illustration of his true spirit and intentions; his insistance on his particular way of closing a company's books being rigidly adhered to for *three* successive closing periods after he had withdrawn, is worth mentioning. After that, he was satisfied that those responsible would have become so thoroughly familiar with the principles and methods involved, that he could fully trust them to make no *detrimental* modifications in them.

Since Mr. Taylor's system, with many of his particular mechanisms and other detail methods, have become more generally known, numerous ingenious persons have been at work trying to invent improved mechanisms to take the place of some of his earlier and rather crude ones, and some of these have been highly successful and should, eventually at least, be taken advantage of generally; but as these things never appeal the same to persons who are being initiated into the system, as to persons who have become thoroughly conversant with it, it still appears best to begin our installation with some of the more primitive, but for that very reason, more obvious, mechanisms and detail methods, just the same as we never put an apprentice to work at once in the most highly developed and improved manner. To become highly proficient in anything requires an individual development that approximates more or less to the development of the trade or art itself.

It is some of these devices that Mr. O'Conner has referred to, and such of them as I have been made familiar with certainly appear to be decided improvements on the replaced devices originally introduced by me; for the plant Mr. O'Conner represents is one of my former clients.

Independent of the evolutions of Mr. O'Conner and his predecessor, Mr. Ballou, I have also long ago given up the original storing away of the job—move—inspection—and instruction cards, etc., in pocket sheets in the route files; but when it comes to his deviation from the handling of the job cards in the special machine boxes introduced by me as a substitute for the original planning board, I must warn him to be very careful that he does not get into greater difficulties than he is trying to avoid.

When it comes to the difficulties Mr. O'Conner experiences these days by pressure from superiors who are not conversant with the details of his position, to effect similar improvements, with their resultant economies, in other functions of the system, he has my undivided sympathy, though with business at low ebb every effort must be made to reduce system expense to a minimum.

But, unfortunately, the expense of a planning department cannot be reduced proportionately to the reduction in volume of business any more than other major portions of the total indirect expenses; and if this is attempted, the result will be the impossibility of rehabiliating the planning department as fast as the volume of business again increases.

How to make the best of this difficulty forms the principal topic of Mr. Wilfred Lewis' discussion of Mr. O'Conner's paper, and I shall, therefore, not go further into the matter.

WILFRED LEWIS[1]: The problem treated by Mr. O'Conner of maintaining the methods of scientific management under varying business conditions has been impressed upon the Tabor Manufacturing Company for the last eighteen years, and in no other company, perhaps, has the variation in business conditions been so great.

We were fortunate in the beginning to have the personal help and guidance of Mr. Taylor himself under a great variety of conditions and against very strenuous opposition which delighted in reporting the times and places where the Taylor System had been tried and thrown out. But we had faith in our leader and his magnetic personality carried us safely through a multitude of storms.

We had very few established forms and records, in the early days before Taylor's paper on "Shop Management" appeared, and those who have followed the pioneer work done for us by Mr. Barth and Mr. Hathaway can hardly realize the burden imposed upon them in the development of a system from which later installations are relieved by a growing nucleus of information and an active Society devoted to its promulgation.

Probably no stronger contrast in business conditions can be drawn than is painfully evident at the present time between this year of grace and its predecessor, but when, as in our case, the rising market in 1919 was met by a fire and it became necessary to move to a new plant ten miles away in a very severe winter, we surely had a monkey wrench thrown into our system that was stunning in its effect; but later on in the spring when we began to revive under a mountainous accumulation of orders, it was a pleasure to see the system begin again to function and prove, as Taylor always contended, that when properly introduced it had come to stay and could not be thrown out by anybody. And this I think is true of anything deeply rooted in human experience. We can learn and retain new ideas more readily than we can discard or forget old ones, and the greater the utility of an invention or system, the harder it is to drop it. In other words, inertia is a fundamenal law of nature, and it applies, I believe, with the same force and effect to mental as to physical phenomena. It is only a strong personality with a message to deliver and endowed with the courage of conviction, who can swerve the minds of men from their beaten paths and lead them into new pastures.

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[1] President, The Tabor Manufacturing Co., Philadelphia.

In the last two years we have been through a fire, a moving, and an unprecedented boom followed by unprecedented depression and we still have our system intact. Our organization, to be sure, has been reduced to skeleton form, but we have a nucleus ready for expansion when the time comes and we have been able to avoid a shutdown by transferring our planning men into the shop to work with a small force on short time and keep a small but steady volume of work going through.

Our men rather enjoy the transfer from office to shop, and although clerks seldom gain that experience, our assistant secretary has been glad to embrace the opportunity. I think all draftsmen would be benefited by such service and that pattern making is the experience they most urgently need, but our draftsmen have not yet been available for shop work on account of the drawings to be completed.

When there is comparatively nothing to do, as at present, the problem of maintaining an organization and with it an elaborate system of production is very trying indeed, *but we figure that eventually it would cost more to shut down and rebuild our organization.* What is best to do under the circumstances depends of course upon how long the depression is going to last, but we think we are doing our part for the return of good times by keeping our doors open and our wheels turning.

As to the changes in forms and methods proposed by Mr. O'Connor, no one realized more clearly than Taylor the cost of a change of any kind, whether good or bad, as an interruption to progress; and during the introduction of his system he would not tolerate any change, however alluring it might be. The main consideration with him was to get the ball rolling and get results, after which improvements could be considered if desired. But the whole thing is such a closely woven fabric and so nicely balanced in its various parts that I would not consider any innovations without reference to the men who use the forms or methods, to be amended, in their daily tasks, and I beg to present what follows as the opinion of our Mr. Carter upon whom the maintenance of our system in its original integrity has been placed. I regard the system as a labor-saving device to be kept in working order and modified only where all the reactions thereto have been thrashed out and found on the whole to be advantageous.

I do not think, as suggested in the first paragraph, that the engineer who makes an installation should ever quit the job. He should have an understudy, or assistont, to stay with the business and continue his work; and so should every individual not easily replaced.

We keep in touch with Mr. Hathaway as our installation engineer and his assistant, Mr. Carter, reports as follows:

Paragraph 2—This is sound logic. We must not mistake form for principle. Any data that is of value is worth recording. It is by the accumulation of such data that a science is developed. The mere collection of data as a matter of history is absolutely useless, but if it creates an influence on future conditions, it becomes indispensable. As for minimizing our classification; No! The greater the degree to which it is carried, the easier it is to determine individual costs, which, obviously, should govern future production. As to the interpretation of symbols, it is comparatively the easiest of any method of classification.

Paragraph 3—The Taylor Society was organized for this very purpose.

Paragraph 6—Short cuts are the most tempting and at the same time most disastrous expedients that a manager can resort to. While he may accomplish the desired result, he does so at a tremendus cost of both money and effort. There is nothing done in the planning department that was not originally done in the shops, but the planning department has assumed certain responsibilities for which it is better fitted than the manufacturing department. In the cycle of planning, certain definite functions *must* be performed. If short cuts are resorted to, the extra effort must be made up somewhere and it usually is in the manufacturing department. The very fact that there *is an excuse for a short cut is a frank admission that some one fell down in the beginning,* as was illustrated by the Irishman who missed his train, and upon being asked why he did not run faster, replied: "Sure, I ran fast enough, but I didn't start soon enough."

Paragraphs 8-9—Route Files, if properly put together, should not fall apart even upon being dropped to the floor. As to changes of methods, they should all be looked upon with suspicion unless it has been proven beyond a doubt that they surpass that which they replace. The great danger is that they may be improved "out of existence" and the underlying principle lost forever.

Paragraph 11—There is some doubt that this method of moving would work in all plants. Moreover, the minute you begin to decentralize you lose immediate control of production.

Paragraph 12—The fact that planning department records must show the exact location of materials at all times, and also that job analysis which is the basis for cost keeping and provides for the automatic movement of materials, is sufficient cause for the central control of more men instead of being subordinate to shop foremen.

The above observations are offered in the hope that they may be helpful to production managers cut adrift from their installation engineer, but with the feeling that it is better never to cut the line of communication with him.

R. G. Scott[1]: The development of scientific management in a plant can never be considered a finished task. The so-called installation is but the ground-work for further continuous development. We expect to keep experts in the shops for the maintenance of equipment; likewise we should have competent men for the maintenance and further development of management methods. It would be a great benefit to the latter if there could be, as Mr. O'Connor suggests, a central place for the filing of standards and the detail developments of different firms.

I believe that about a year ago Mr. Lichtner made some such suggestion in a paper presented to this Society.[2] I do not know whether anything has been done as a result of that earlier suggestion. I believe that a central file of approved standards, and of modifications under particular circumstances, as in the experience of Mr. O'Connor, would be valuable.

The accepted standards of Taylor technique are pretty well proved and every modification should thoroughly prove itself before being accepted. There is no better way—but it is a costly way—of convincing executives who don't understand and scoff at prescribed standards of method, than to compel them to go back to and work for a while with the pre-Taylor methods. During the "flood" period of activity during the war, to which Mr. O'Connor refers, in our plant also time and not cost become the prime consideration, and yielding now to this influence and now to that, considerable changes in methods were made. But when I got back to the company after a considerable absence, the first thing with which I was greeted by a superintendent—who had been a foreman—was: "How soon can we get back to our previous methods of doing work?" The changes in method which had come about during the pressure of the "flood," made the Taylor methods, which had been disturbed, look all the better to the operating men!

The "flood" period, when speed and not cost was the dominant factor, may have caused the evolution of some better details of method, and these should be searched out; but I cannot believe that that period accomplished in that respect very much good. Our real problem is not how much we can get out of such periods, but a spreading of the gospel of scientific management to the end that these flood and ebb periods will cease to be, or will be minimized in their influence.

Frank B. Gilbreth[1]: The one idea I want to leave is that the crux of the problem is to effect a difficult reconciliation—difficult because we haven't yet learned how. On the one hand, we know that nothing is exactly right in the work of any one of us—Taylor included; on the other hand, the question of changing the Taylor System is a very serious thing. I bet Mr. O'Connor is monkeying with dynamite and may get into serious trouble if he doesn't look out.

We have got to discover by more exact measurements which give more exact standards—the evolution which makes for improvement in detail without change in its principles and methods which are fundamental and permanent. Not all apparent change is really change; for instance, there are many who consider the work of Gantt a deviation from the Taylor philosophy. It isn't at all; Gantt simply stressed certain parts more than Taylor himself did.

The aim of this Society should be to preserve the best there is in the Taylor System, and to consider any change as monkeying with dynamite, and handle it accordingly.

Richard A. Feiss:[2] There was something in Mr. Lewis' discussion which struck me forcibly. It seems to me that if ever there was a time when scientific management and the methods it involves must be maintained, it is in a time of depression like the present.

This ruthless cutting down of overhead by discontinuing the so-called overhead involved in the maintenance of the best methods, is costly in the long run—as costly as would be the cutting down of the maintenance of physicial equipment. It is in these times that industry must preserve everything which makes it more efficient; including the continuation of securing information in the planning department—indirect expense; overhead—which will make it still more efficient.

So I was struck by Mr. Lewis' report that at Tabor they figure that eventually it would cost more to rebuild methods than to keep them intact in these times of depression.

H. K. Hathaway[3]: At the risk of again laying myself open to criticism on the score of being orthodox, dogmatic and reactionary, I wish to add to that of Mr. Gilbreth my plea and warning against what experience has taught me to be an extremely dangerous and often unnecessary and expensive practice; namely, yielding too readily to an immature desire to change from methods and mechanism of proven worth without having fully understood or established their use to the fullest degree. I have made my full share of contribution to what Mr. Taylor characterized as "damned improvements," only to learn that the closer I adhered to the methods and mechanism developed under Taylor's guidance the more might I count upon the results being satisfactory.

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[1] Assistant Factory Manager, H. H. Franklin Manufacturing Co., Syracuse, N. Y.

[2] *Bulletin,* Vol. V., No. 4

[1] Consulting Engineer, Montclair, N. J.

[2] Joseph & Feiss Company, Cleveland.

[3] Consulting Engineer, Philadelphia.

I do not question the fact that the mechanism described by Mr. O'Connor is working—that it may be working better than the mechanism which it superseded and with an apparent saving in cost of operation. I do wonder, however, whether in this case the original plan had been fully applied and perfected in all of the details of its operation, whether some of the savings may not be more apparent than real, whether work lopped off at one point may not have been later added at another in order to compensate for unforeseen loss of control.

For some reason—which may be clear to the student of psychology—sometimes it is difficult to make the original plan operate smoothly and there comes a time when it takes courage, patience and great faith to stick to it until it has been made to work. At this stage the installing engineer is beseiged with all manner of suggested changes and the temptation to follow the course of least resistance is great. Everyone is tired and more or less discouraged. Something different from that with which they have been struggling is a welcome relief. Hence if a change is decided upon, all hands—particularly those who have proposed the change—go at it with a vigor and spirit which makes it an apparent success from the start. If one-half of this vigor and determination had been applied to making the original plan work and to its intelligent development and refinement, it would have been made to work smoothly and more satisfactorily than the substitute.

From the foregoing I do not want it understood that I advocate anything so foolish as attempting to apply for example the mechanism or system, as developed by Taylor or under his direction for a specific general machine shop, to a machine shop engaged on repetitive work, to a totally different type of industry or even to another general machine shop. Each business presents in a greater or lesser degree special problems which must be met. Even in the case of a given business, variations in the mechanism may be required to suit different products or varying quantities in which a given product may be manufactured. Such adaptations are of course necessary.

Changes will inevitably take place as time goes on and as experience and changing conditions call for them. Such changes come about as a matter of evolution and the establishment of ever improving standards.

Mr. O'Connor in his paper pointed out the necessity, to some extent directly and to a greater extent inferentially, for greater supervision of the operation and development system. Mr. Lewis also brought that thought out in his discussion. I don't think the production manager is the one who ought to be responsible in such matters. It ought to be someone who bears less closely a relationship to operation and production; more the relationship of the engineering department or the inspector, or of the maintenance department, or a combination of those three. Maintenance and development of the system and plan of organization should be regarded as a definite and major function preferably to be filled by the company's employee who acted as the consulting engineer's principal assistant during the period of development and installation.

I trust that I may not be violating professional ethics in saying that most companies dispense too soon with the services of the consulting engineer under whose direction their application of scientific management was made—for this the consulting engineer himself is as often to blame as the client. A continuing relationship somewhat akin to that which exists between a corporation and its legal adviser, but requiring more regular contact and more initiative on the engineer's part, is desirable. Under such an arrangement, naturally the man in the plant whose function it would be to look after development and maintenance of system, would be in effect the consulting engineer's representative.

I do not want my discussion to be regarded as a sweeping condemnation of the changes described in Mr. O'Connor's paper, although I do believe that he has in making the change lost certain things fundamentally necessary to perfect control, the value of which may not have been apparent owing to imperfect development and use of the original mechanism and plan, and to a lack of complete understanding of it and its purposes. In fact I feel that there may be some impropriety in my discussing his paper without a better understanding of all of the details of the scheme which he describes, and by comparison showing in detail the relative advantages and disadvantages of each. I wish time permitted be to do so. Likewise I wish to say that I do not want to be construed as disagreeing with Mr. Barth, whose pupil I still consider myself. Essentially I believe I am in accord with him in this matter.

Mr. O'Connor has done in presenting this paper a finer and bigger thing than the mere description of a mechanism; he has helped to bring us back to the practical side of the scientific management movement from which we were drifting on what seemed to be a more pleasant though dangerous current. That his doing so is appreciated at its just value is evident from the large attendance at this session and the interest shown by the discussions of practical men.

HENRY H. FARQUHAR:[1] One thing which has interested me very much now occurs to me as a possible explanation of why we are questioning established methods.

Mr. Ralph G. Hurlin, of the Russell Sage Foundation, has worked out wholesale prices for a period of 110 years. The curve looks something like this:

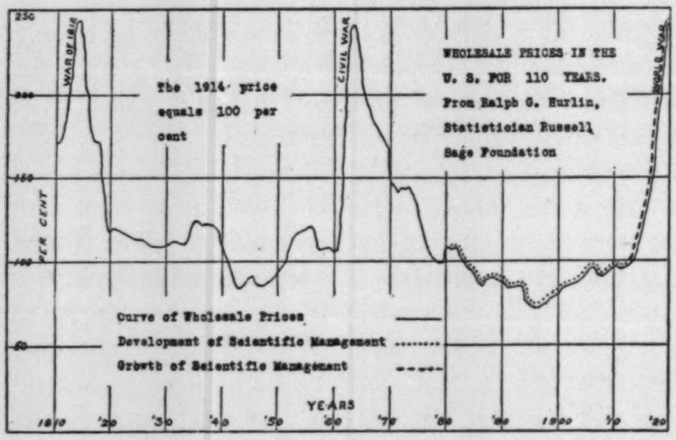

FIG. 1.

I have added to the curve of prices some chronological data concerning the origin and development of scientific management. You will observe that Mr. Taylor was engaged on his early experiments which led to the development of scientific management approximately at the end of the long period of declining prices which followed the Civil War, and that the *growth* of scientific management has been during a period of rising prices and corresponding business activity and profits. But today we are in a depression and are faced by a period of falling prices—something new to scientific management.

During this period of 110 years there have been fluctuations in wages paid, but the general tendency has been consistently upward. There has recently been a recession from the abnormally high wages of the World War, but I believe we must recognize that the wage level is going to be permanently higher than it has in general been in the past. Improvements in machinery and management methods have got to make up for increased wages and a higher standard of living. Scientific management offers the most available way for accomplishing this purpose. But—and this is my point—the methods and even the principles of scientific management which have been found so satisfactory under easy business conditions must be thoroughly scrutinized if the future of scientific management is to be as significant as its past.

WILLIAM O. LICHTNER:[1] It certainly would be helpful to have some place to go where the experiences of many concerns could be seen and studied; yet I doubt the practicability of working out a plan which is more effective than that offered by individual industrial engineering concerns and office equipment concerns. In each large city each year the office equipment concerns have a large exhibit of all kinds of labor saving devices and will cooperate with any one indicating to them any problem where economy can be expected. In this way the production manager has at his command two avenues of help, one the industrial engineers and the other the equipment firms.

This paper in speaking of standard forms and equipment does not mean, I am sure, that the advocates of science in management have some prescribed set of forms and certain equipment which are the last word in perfection and will apply to every business. Engineers who are masters of their profession, no matter whether they started out as the followers of one school or another, and especially any of the real followers of Taylor, do not believe or advocate that the system is composed of a standard bunch of forms and equipment. Novices and quacks are the only ones who know no better than that. The thought behind this paper is that if it were possible to concentrate in some one place like the Taylor Society headquarters all the evolutions of the various plants practicing the science of management, it would be of assistance to the production manager in concentrating his organization's efforts to become effective and so reduce the number of people required to direct the work. This is the problem of the production manager, and unless he can bring this about his organization is pretty sure to deteriorate.

When the engineer finishes his contract, whether it be a year or more, he leaves the client's organization with the full knowledge of each step which as been made, and if they are left in the proper frame of mind there is no reason whatever why the production manager should not be expected to make with his organization further economies in routine, forms and equipment which will materially reduce the amount of work in the office and make the control more effective. The production manager and his staff are the logical ones to do this work and not remain dormant until an engineer gives time and instructions and does the thinking for them.

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[1] Industrial Engineer, Belmont, Mass.; Harvard University Graduate School of Business Administration.

[1] The Thompson & Lichtner Co., Boston.

E. E. Hunt:[1] In the Managing Director's report he called attention by inference to the fact that in groups other than the production group, the work of the Society has gone forward during the past year, but that in this particular group things have been at a standstill.

I should like to suggest a reason why this may be so. When a paper like Mr. O'Connor's is before us, the "elder statesmen" of the Taylor Society, whom we all honor, tell us anecdotes about the perils they met when they tried to make changes in the Taylor System years ago, instead of confining themselves to a critical discussion of the merits and demerits of impending changes proposed by the author of the paper. I am convinced that Mr. Hathaway could tear Mr. O'Connor's paper to pieces. I only wish he had done it. I believe Mr. Barth could have torn it to pieces. I wish he had done it.

Members of the production group can hardly be counted upon to meet here year after year to hear a discussion of the Taylor System wholly in the uncritical terms of disciples worshipping a master. Change will come whether we like it or not. If those who were so fortunate as to be personal disciples of Mr. Taylor wish to guide these changes, the one best way will be for them to criticize them on their merits; patient with youth, patient with ignorance, patient with impatience. I am one of the younger members, ignorant like many of us here. I shall be altogether glad if you will discount my remarks, laying them to youth and ignorance and impatience. I make them because I think they are in the minds of more than one of your hearers.

Mr. O'Connor (Closure): If we admit, and we do, that there is an engineering function in the installation of scientific management, we admit that superstructure must be created. Any construction work must have it. With this admission we then must admit that by its very nature a time must come for some elimination. All engineers admit it and will continue to do so. Therefore is not the main theme still unanswered—what is our Society doing to maintain present installations as scientific layouts? Every engineer acknowledges that time is sure to develop improvements and they are applicable to scientific management. None of them we adopted came overnight; they were the result of evolution and came as a decided improvement. This is something the society must take into consideration, and whether they will or no, the engineers can learn something from plant managers. The Universal Winding Company is operating today along the same principles Mr. Barth laid down; more than one engineer who has visited our Planning Department maintained that it was as complete as any visited. We have something, and what we have is freely given to members of the Taylor Society, for much that we have, came as a result of sweating blood and we hope to be of service to managers in similar positions.

Mr. Barth realizes that changes are bound to come, but insists that they ought not to be made hastily. That is exactly our position; where we have adopted permanent improved appliances they have come to stay.

Mr. Scott's diagnosis of my paper is correct. My purpose is to enlarge upon the causes which are to continue, and to pass lightly upon those we expect to be eliminated; of this last the last paragraph treating of an extraordinary moving method is an excellent example.

A review of Mr. Gilbreth's discussion will show that he has the professional attitude. Nothing must be changed—with respect to methods—unless the engineers sanction it. But I am talking of an installation where the engineer has finished. The management sees or hears of an improved appliance and after full consideration—Mr. Barth's idea exactly—it is adopted. Is not that consistent with every day business practice? Engineers of scientific management are not giving a plant manager something that only the engineer can handle. No! I disagree with Mr. Gilbreth; it is not I who am monkeying with dynamite; but if it is being monkeyed with, as a member I am not permitting the Taylor Society to be the victim.

To Mr. Hathaway I would say we have not permanently neglected principles; but we have changed a few methods and done so in the proper manner—as a result of careful study and experiment.

Mr. Hunt has made the appeal that is behind my paper. We must not neglect the field of shop management; the job is not complete and will not be until the experience of plant managers is recorded and standards, such as Mr. Lichtner has proposed, adopted. Even then arrangements must be made for changes, and I hope the Society will devise means for the accumulation of the pertinent data.

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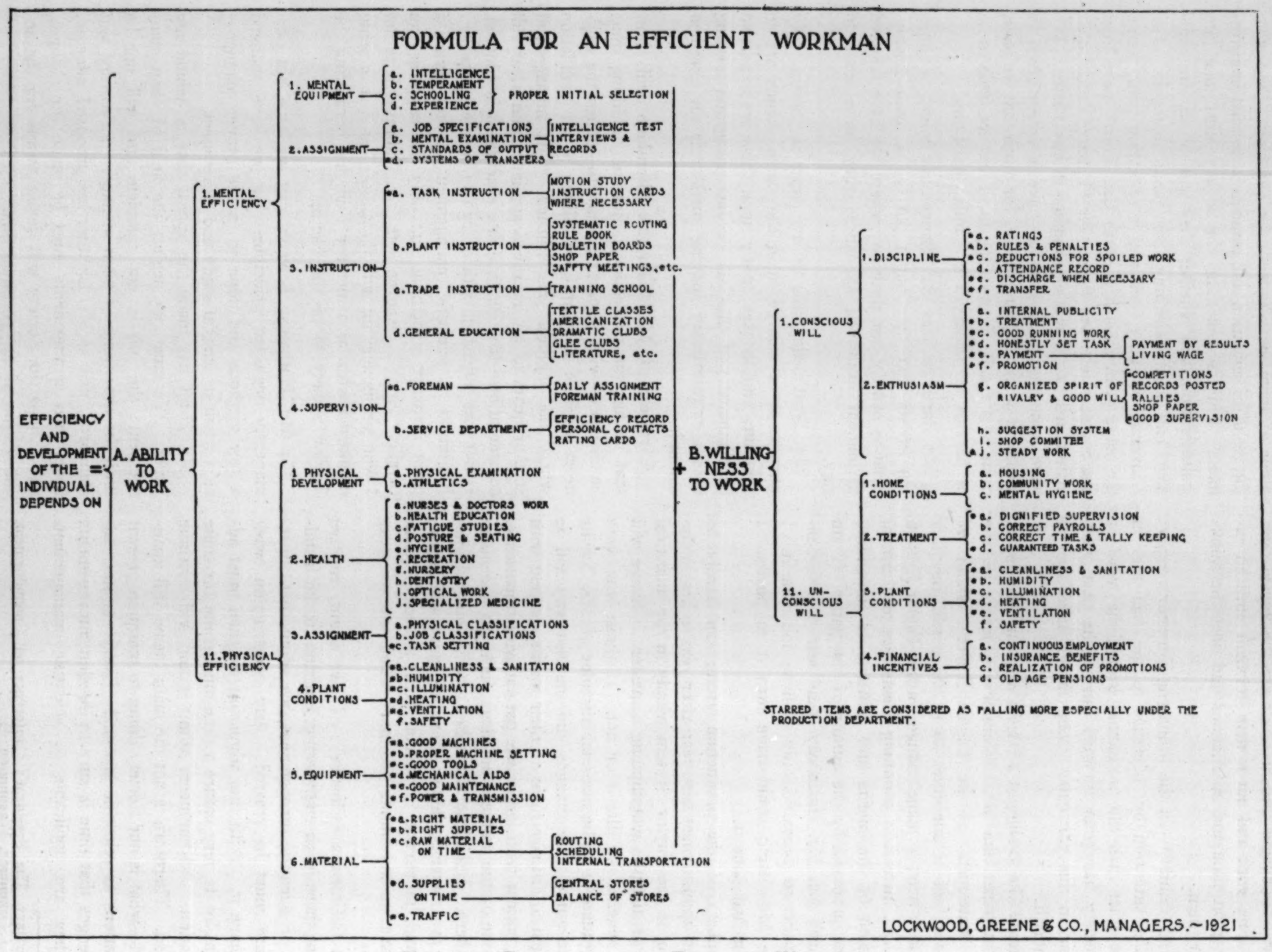
[1] Secretary, The President's Conference on Unemployment, Dept. of Commerce, Washington, D. C.



FORMULA FOR AN EFFICIENT WORKMAN

EFFICIENCY AND DEVELOPMENT OF THE INDIVIDUAL DEPENDS ON = A. ABILITY TO WORK + B. WILLINGNESS TO WORK

- A. ABILITY TO WORK
  - 1. MENTAL EFFICIENCY
    - 1. MENTAL EQUIPMENT — PROPER INITIAL SELECTION
      - a. INTELLIGENCE
      - b. TEMPERAMENT
      - c. SCHOOLING
      - d. EXPERIENCE
    - 2. ASSIGNMENT — INTELLIGENCE TEST, INTERVIEWS & RECORDS
      - a. JOB SPECIFICATIONS
      - b. MENTAL EXAMINATION
      - c. STANDARDS OF OUTPUT
      - *d. SYSTEMS OF TRANSFERS
    - 3. INSTRUCTION
      - *a. TASK INSTRUCTION — MOTION STUDY, INSTRUCTION CARDS WHERE NECESSARY
      - b. PLANT INSTRUCTION — SYSTEMATIC ROUTING, RULE BOOK, BULLETIN BOARDS, SHOP PAPER, SAFETY MEETINGS, etc.
      - c. TRADE INSTRUCTION — TRAINING SCHOOL
      - d. GENERAL EDUCATION — TEXTILE CLASSES, AMERICANIZATION, DRAMATIC CLUBS, GLEE CLUBS, LITERATURE, etc.
    - 4. SUPERVISION
      - *a. FOREMAN — DAILY ASSIGNMENT, FOREMAN TRAINING
      - b. SERVICE DEPARTMENT — EFFICIENCY RECORD, PERSONAL CONTACTS, RATING CARDS
  - 11. PHYSICAL EFFICIENCY
    - 1 PHYSICAL DEVELOPMENT
      - a. PHYSICAL EXAMINATION
      - b. ATHLETICS
    - 2. HEALTH
      - a. NURSES & DOCTORS WORK
      - b. HEALTH EDUCATION
      - c. FATIGUE STUDIES
      - d. POSTURE & SEATING
      - e. HYGIENE
      - f. RECREATION
      - g. NURSERY
      - h. DENTISTRY
      - i. OPTICAL WORK
      - j. SPECIALIZED MEDICINE
    - 3. ASSIGNMENT
      - a. PHYSICAL CLASSIFICATIONS
      - b. JOB CLASSIFICATIONS
      - *c. TASK SETTING
    - 4. PLANT CONDITIONS
      - *a. CLEANLINESS & SANITATION
      - *b. HUMIDITY
      - *c. ILLUMINATION
      - *d. HEATING
      - *e. VENTILATION
      - f. SAFETY
    - 5. EQUIPMENT
      - *a. GOOD MACHINES
      - *b. PROPER MACHINE SETTING
      - *c. GOOD TOOLS
      - *d. MECHANICAL AIDS
      - *e. GOOD MAINTENANCE
      - *f. POWER & TRANSMISSION
    - 6. MATERIAL
      - *a. RIGHT MATERIAL
      - *b. RIGHT SUPPLIES
      - *c. RAW MATERIAL ON TIME — ROUTING, SCHEDULING, INTERNAL TRANSPORTATION
      - *d. SUPPLIES ON TIME — CENTRAL STORES, BALANCE OF STORES
      - *e. TRAFFIC
- B. WILLINGNESS TO WORK
  - 1. CONSCIOUS WILL
    - 1. DISCIPLINE
      - *a. RATINGS
      - *b. RULES & PENALTIES
      - *c. DEDUCTIONS FOR SPOILED WORK
      - d. ATTENDANCE RECORD
      - *e. DISCHARGE WHEN NECESSARY
      - *f. TRANSFER
    - 2. ENTHUSIASM
      - a. INTERNAL PUBLICITY
      - *b. TREATMENT
      - *c. GOOD RUNNING WORK
      - *d. HONESTLY SET TASK
      - *e. PAYMENT — PAYMENT BY RESULTS, LIVING WAGE
      - *f. PROMOTION
      - g. ORGANIZED SPIRIT OF RIVALRY & GOOD WILL — *COMPETITIONS, RECORDS POSTED, RALLIES, SHOP PAPER, *GOOD SUPERVISION
      - h. SUGGESTION SYSTEM
      - i. SHOP COMMITEE
      - *j. STEADY WORK
  - 11. UNCONSCIOUS WILL
    - 1. HOME CONDITIONS
      - a. HOUSING
      - b. COMMUNITY WORK
      - c. MENTAL HYGIENE
    - 2. TREATMENT
      - *a. DIGNIFIED SUPERVISION
      - b. CORRECT PAYROLLS
      - c. CORRECT TIME & TALLY KEEPING
      - *d. GUARANTEED TASKS
    - 3. PLANT CONDITIONS
      - *a. CLEANLINESS & SANITATION
      - *b. HUMIDITY
      - *c. ILLUMINATION
      - *d. HEATING
      - *e. VENTILATION
      - f. SAFETY
    - 4. FINANCIAL INCENTIVES
      - a. CONTINUOUS EMPLOYMENT
      - b. INSURANCE BENEFITS
      - c. REALIZATION OF PROMOTIONS
      - d. OLD AGE PENSIONS

STARRED ITEMS ARE CONSIDERED AS FALLING MORE ESPECIALLY UNDER THE PRODUCTION DEPARTMENT.

LOCKWOOD, GREENE & CO., MANAGERS.—1921

TABLE I. FORMULA FOR AN EFFICIENT WORKMAN

THE FORMULA FOR AN EFFICIENT WORKMAN[1]

By Boyd Fisher[2]

BELIEVING that the most valuable product of this meeting will come from the discussion, I take the liberty of presenting my paper in tabular form (See Table 1) preceded by a brief explanation, as follows:

Lockwood, Greene & Co., Managers, feel that whatever the development of machinery and processes, the human being is still the unit of efficiency and that the greatest progress of management will be found in considering the worker not as an incident to, but as the chief factor of production. Improved methods and machines are considered as devised to help the worker, and when he is kept always in mind there is less danger of neglecting phases of his development and bringing about industrial discord and social ills. This is the sincere and unprompted view of Mr. S. Harold Greene, President of the Company. The Service Department is his creation and one of his chief interests. He depends upon it to secure the greatest efficiency and development of the individual workman.

The Service Department, in conference, has devised this formula as representing, to its best present knowledge, all of the factors which regulate the efficiency and the development of the individual workman. We do not believe that this chart indicates the relative weight of all factors, nor do we have any special point to make in the way the chart is put together. For instance, "Enthusiasm" might have been placed over "Discipline," under the sub-heading "Conscious Will." So far as we now recognize them, this chart contains all of the principal items to be taken into consideration, but makes no attempt to sub-divide them into all of their ultimate activities in the plant. This is particularly true of the health section. We should be glad to learn of principal divisions which should be included, and which we have overlooked. It is recognized that the choice of terms is open to discussion and that in many cases our own experience or even mere chance has determined the vocabulary.

There is nothing final in our minds in the apportionment of supervisory responsibilities between the Service (Personnel) Department and the Production Department. In the first place, in the textile industry we do not clearly distinguish between line and staff functions, and many things are set down under production in this department which should be consigned to some staff department, such as an engineering or a standards or a methods department. On this chart we wish merely to reassure the operating departments that by including things which they now do, if they are done, in a chart devised by a service department, we do not mean to take over the entire function of management. There is, of course, another meaning in this division of functions; namely, that all departments work together for the efficiency of the individual, and that neither service nor production nor any other department that might be created to swing some of these duties, can alone produce an efficient workman. To the traditional operating head, the number of things set down as belonging to the Service Department comes as a surprise, and he will need to be convinced that fully half the conditions of efficiency of workmen lie outside of his own province.

Lockwood, Greene & Co. is using this chart as the first step in a personnel audit. It is intended to guide the Service and the Production Departments in making inquiries as to what area of the individual workman's development is being neglected. It seems to us to be particularly practical for use in a traditional industry where such a device as time study or task setting is looked upon with distrust. When new methods are shown in perspective, they do not appear perhaps quite so formidable.

DISCUSSION

Meyer Bloomfield:[1] What is the most striking feature of Mr. Fisher's formula? It is that practically nine-tenths of the items which he sets down fall within the scope of the powers of management. The workman is the recipient of their benefits.

Now it is logical and useful to set down what management can do and ought to do to bring about efficiency in the workman. To the extent that management fails to do the things here set forth, individual efficiency is obstructed if not made impossible. It will take a long time to fulfill these elementary duties, to provide these basic conditions. What we have in this formula is really a formula for efficient management. And this is as it should be.

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[1] A paper presented at a meeting of the Taylor Society, New York, Dec. 3, 1921.

[2] Service Department, Lockwood, Greene & Co., Boston.

[1] Bloomfield & Bloomfield, Boston, Mass.

Unless management uses its powers wisely and skilltully to remove the obstacles to good work, it can have no right to find fault with the workman. He can do but little as regards the physical conditions. the mechanical equipment, and he should not be expected to do much with respect to these things.

But if the time comes when management has done all that science can suggest by way of providing the best of material, methods and tools, what then of the workmen's efficiency? It seems to me that the fundamental problem raised by Mr. Fisher's paper is this? Who is responsible in the last analysis for efficiency? Is it management alone? Or is there a science of man power which can teach us that only by a more genuinely intelligent insight into the question of directing the energies of men can we arrive at a true distribution of responsibility? I submit that we have as yet but barely touched the fringes of such a science. We look upon the workman as a "passive bucket," and so long as we do so we do not get, and need not expect, those exertions which count in successful production. Whatever may be the excuses for it, the pitiful truth is that the workman himself, that labor, insists on supporting its position of self-imposed inferiority in the production program. A dignified, a self-respecting attitude on the part of labor, generally speaking, would insist on a share of the functions which have to do with efficiency. Labor will continue to be a poor relation in industry until it courageously undertakes those responsibilities which are largely and mostly within its own control, if it but knew it. The common sense view would say that when a man is engaged in selling his time, labor power, and producing skill, he would in self-interest, and in the interest of his craft standard, see to it that he provided those helps which now management is forced to provide; helps by way of training, fitness, health, discipline, and satisfactory output.

Management has no choice today but to make these provisions, but it does so at a sacrifice which is costly for labor that has not as yet seen the wisdom, the strength, and the economic potency in being the all-'round expert that it should be with respect to its own industrial contribution. It seems to me that here is the way of hope. There is no other; for concessions gained through force, discord, and even bargaining, necessary though they may be in the circumstances, can never have the permanence and vitality which mastery of the job can give. The secret of power is mastery of the job. That alone counts in the economic result. It would seem as if management is obliged to furnish the initiative and the stimulus for this higher level for labor. But it is worth the effort, because industry has everything to gain by a scientific redistribution of responsibilities, with all the training values that it implies. When efficiency becomes the common concern of both the management and the labor forces, each making its appropriate effort to this desirable end, we shall be nearer to a real partnership in production than has as yet taken place.

F. C. CLOTHIER:[1] Mr. Fisher's chart is a valuable contribution to our conception of the efficient workman—and what makes him efficient. In its various brackets it includes most, if not all, of the known factors entering into the development of the worker's efficiency on the job.

It might not be out of order to lay emphasis upon a point which Mr. Fisher has already covered; namely, the need for the conscious consideration of the worker as an individual, rather than as a member of a group which responds in one way to one stimulus and in another way to another. Industry is becoming more and more aware of these differences between individuals. In recent years industry has made considerable progress in methods of ascertaining and utilizing the special abilities and potentialities of the individual worker. That men differ in skill is, of course, obvious. That men differ in *kind* of potentiality is becoming equally obvious. We must exercise the greatest judgment, not only in the selection of skilled men for work requiring their skill, but in the selection of green help to learn this work or to receive this instruction or that course of training.

Mr. Fisher's chart provides for such individual differences under "proper initial selection," "assignment," "supervision," "physical development," etc.

But this recognition of the differences between men must not be restricted solely to their abilities. Mr. Fisher divides this chart into two wide divisions; first, the ability to work, and second, the willingness to work. Limited as our knowledge is of the factors which enter into a man's ability to do this work or that, our knowledge of those intangible motives which impel him to do this work or that, is lacking in far greater degree. Yet the differences in individual motives exert a pro-found influence upon individual efficiency, according to whether those individual motives are harnessed or not harnessed to the individual's work.

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[1] The Scott Company, Philadelphia.

We are all familiar with Captain Bairnsfather's soldier, utterly dejected and discouraged, who was haled before the captain by the sergeant.

The captain asks, "What's the matter with him, Sergeant?"

"I dunno, sir. All 'e 'as to do was to walk all day around the camp ground and pick up cigarette butts and scraps of paper on the point of a stick, *but 'e don't seem to 'ave 'is 'eart in 'is work*."

Our problem is so to harness the individual motives or interests of our workers that their hearts will be in their work.

Very little progress has been made along this line and a vast opportunity for intelligent research opens up.

One small-parts manufacturer of the Middle West, for instance, made a study of efficiency and stability in certain of its departments with relation to mental alertness as approximately by the workers, relative retardation in school. It was found that in the Inspection Department, where the work was extremely monotonous, the labor turnover varied directly with the mental alertness. Only those workers possessing minds of the plodding routine type found satisfaction in the work.

On the other hand, in the Assembly Department, where the work calls for a high degree of initiative and judgment, the turnover was highest among those of poor mental attainment. The men possessing active minds, not the plodders, were the men who found satisfaction in the work.

This is merely a relatively crude instance of the kind of research which might prove extremely valuable in furnishing data whereby management might control and utilize the individual motives of its workers.

Before closing, may I call attention again to the fact that Mr. Fisher has divided the problem into two general parts—the first, the worker's ability to work, and second, the worker's willingness to work. May I for a moment suggest for your consideration a point of view which calls for a third general factor which we might call *the opportunity to work*.

Let us interpret this term not in its vernacular sense, but rather interpret it as the man's position or job or occupation. Then, in the case of each worker we find that we have three elements to develop and coordinate; first, his ability to work; second, his willingness to work; and third, his opportunity to work. So far as it is possible, these three factors should be well-balanced in the case of each employee. He should be so adjusted to his work that, first, he will have the special abilities and potentialities enabling him to meet its requirements; second, he should possess those special interests and motives which will cause him to find enjoyment and a sense of achievement in the work; and third, he should find in his work, in its duties and responsibilities, the opportunity to exercise those abilities of his and to satisfy those interests of his. If we can accomplish this perfect balance, then we have a truly efficient workman.

The need for this balance is emphasized when we consider what takes place when the balance is lacking. Let us suppose, for instance, that our hypothetical worker is well-equipped with the special ability required in his position and that his position contains ample opportunity for the exercise of those abilities, but the worker has little or no interest in that work. In that case we find a worker who is inefficient through sheer inertia. We are all familiar with instances of this kind.

Second, let us suppose that the worker is highly interested in his work and that his position offers ample opportunity for the exercise of such interest, but the worker lacks the necessary ability, whether it be skill or technical knowledge or education or any one of a dozen other *kinds* of "ability"; in that case we have an employee who is probably committing a series of costly blunders.

In the third place, let us suppose that in his job the opportunity is lacking for the worker to utilize his abilities and to satisfy his interests, then we find a true instance of the blind-alley job, usually so fictitious; we find a worker who is probably growing less efficient rather than more efficient and certainly one who is discouraged and thinking about getting a job elsewhere.

Mr. Fisher's chart is going to help clarify our views on this interesting and vitally important subject, and I congratulate him upon the clearness with which the matter has been presented.

NELLE SWARTZ:[1] I am glad that Mr. Bloomfield preceded me in this discussion, as he has so ably discussed many of the thoughts I have had in mind, regarding Mr. Fisher's "Formula for an Efficient Workman."

After I had read over Mr. Fisher's paper, I began to wonder just what efficiency is. Going to Webster I found that efficiency means "Causing effects; producing results; effectual; competent; able." If the aim of Mr. Fisher's formula is to produce an effectual, competent, able workman, or a workman who will produce results, it seems to me that there is one big hole in it; if we should follow this formula we would have, in my judgment, a paternalistic utopia. We might end with efficiency on the side of the management, but so far as the workman is concerned there is only one place where the individual's desire to construct, to develop or to express one's self is taken into consideration, and that is under a sub-heading "Enthusiasm," where there is outlined the "suggestion box" and the possibility of a "shop committee." Much depends on who initiates and determines these things; if the shop committee really functions, so much the better. I am glad that Mr. Fisher added this morning "Leadership" in this part of his outline.

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[1] Chief, Division of Women in Industry, Department of Labor, New York.

There is nothing according to this formula to make sure of arousing initiative in the workman, or satisfying his creative impulse, and there is very little to take care of what Mr. Rowntree has so aptly termed his "intellectual ferment." Mr. Fisher has stated that efficiency is relative, and that is very well; but it seems to me that his outline is made more for the man of Mr. Clothier's story who is satisfied "to go around and pick up cigarette stubs on the end of a stick," than for the highly skilled, keen, ambitious workman, who may be one of the minority, but whose full development and efficiency is most important of all.

DR. ARTHUR B. EMMONS, 2D:[1] Such a chart as is here presented appeals to me as a valuable guide, if rightly or intelligently used. The doctor, for example, who relies on his memory to cover the points of physical examinations soon finds that his omissions are frequent. The more of a mental routinist he is, the less he will omit. But routine medicine is not generally desirable medicine. On the other hand, if the doctor uses a chart or schedule to cover the routine and keeps his mind fresh and critical for the unusual, he is able to individualize or humanize his work.

The danger in using such a schedule is lack of right emphasis, as the author well points out. Finality in this regard is not obtainable or desirable, as it again results in routine. People and conditions are constantly changing and differ in various industries and localities. To stress one feature in one place at one time seems to me good practice.

In the selection of the feature to stress in one plant or with one set of workers or even with one individual worker, some such schedule is like a chart to a navigator.

Who is to use this schedule? How?

My job is to organize and develop health work in twenty-five stores in five cities. Most of these stores have already some kind of health work from first aid to considerable health departments. The different stores have different types of business, different physical conditions, different traditions and finally very different managing personalities.

Industry, too, which this audience represents, undoubtedly has these great differences.

As in my stores, so in industry I conceive the need to be some method of procedure to obtain and develop the best workers.

I wish to briefly describe perhaps the most successful organization of a store in working this out.

A Health Committee—it might broaden its functions under the name Personnel Committee—was formed. At a monthly meeting of one hour, the minutes of the previous meeting are read, a typed copy of which is sent to each member following the meeting. The doctor's report is read. Comparison with past reports is made and his recommendations considered. This is, of course, good education to all, including the doctor.

This committee of a store with a population of about 1,000 is composed of twelve people; the president, the superintendent, the engineer, who is the insurance man, the heads of employment and educational departments, doctor, nurse, visiting nurse, store matron as welfare worker, president of the Mutual Aid Association, and myself as medical advisor.

A schedule might prove a chart by which to guide the course of such a committee (Table 2).

To be most helpful such a chart should fix the responsibility for certain functions on one or more departments; for instance, health education may well be assigned to the Health Department; to the Education or Training Department responsibility for disciplinary functions in the employment.

I therefore suggest that the chart be worked out under headings of departments directly responsible for carrying out its application to the worker.

This Health or Personnel Committee could then take up each point and receive reports and discuss methods of securing their effective application.

To have this done by a committee prevents misunderstanding and tends to produce cooperation of those in different departments, all of which are directly interested and responsible.

Health Factors

Indigestion or gastro-enteritis, is the most common complaint given as a cause of lost time in a certain large store. The common causes of indigestion are (1) errors in diet, (2) bad teeth, (3) bad habits in eating, (4) neglect of bowels, (5) over eating, (6)

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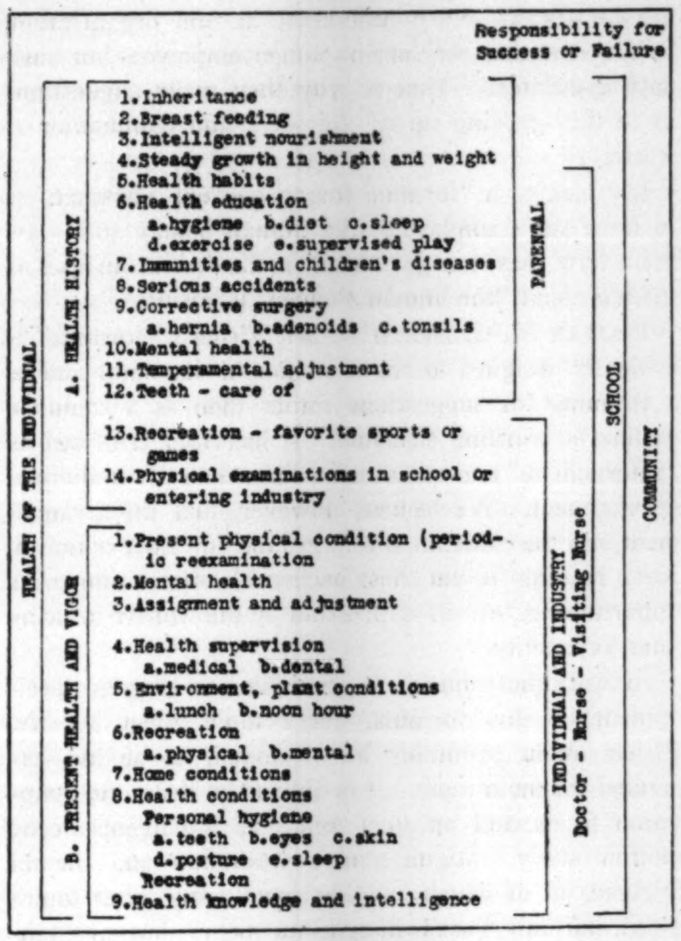
[1] Director, Harvard Mercantile Health Work, Boston.



Responsibility for Success or Failure

HEALTH OF THE INDIVIDUAL

A. HEALTH HISTORY

1. Inheritance
2. Breast feeding
3. Intelligent nourishment
4. Steady growth in height and weight
5. Health habits
6. Health education
   a. hygiene b. diet c. sleep
   d. exercise e. supervised play
7. Immunities and children's diseases
8. Serious accidents
9. Corrective surgery
   a. hernia b. adenoids c. tonsils
10. Mental health
11. Temperamental adjustment
12. Teeth - care of
13. Recreation - favorite sports or games
14. Physical examinations in school or entering industry

B. PRESENT HEALTH AND VIGOR

1. Present physical condition (periodic reexamination
2. Mental health
3. Assignment and adjustment
4. Health supervision
   a. medical b. dental
5. Environment, plant conditions
   a. lunch b. noon hour
6. Recreation
   a. physical b. mental
7. Home conditions
8. Health conditions
   Personal hygiene
   a. teeth b. eyes c. skin
   d. posture e. sleep
   Recreation
9. Health knowledge and intelligence

PARENTAL

INDIVIDUAL AND INDUSTRY
Doctor - Nurse - Visiting Nurse

SCHOOL

COMMUNITY

TABLE 2.

emotions, fear, worry, etc. These causes are due to (1) parental neglect, (2) school neglect, (3) personal ignorance and neglect, (4) community failure.

To prevent such neglect we must have (1) healthy and intelligent parents, especially mothers. The mother who nurses her infant for six to nine months and continues to regulate intelligently the child's diet, and teaches cleanliness and good hygiene, will send the child to school physically fit and trained to good habits. Watching the weight is a valuable guide.

The school must physically examine the child, estimate the child's strength and health, ascertain its health habits and knowledge, and plan a program to develop the child in strength and knowledge of health. The height and weight are good checks on normal development.

The parents and the school must cooperate to develop immunity to the prevalent children's diseases.

The value of games in normal development of the human animal from the cradle to the grave is being increasingly recognized.

The spirit of team work and the relation of the individual to the team may be the most valuable lesson learned in school days.

If the school has succeeded in doing its part it should present to industry, the store, or college, the pupil at sixteen to eighteen years physically fit, in good health habits and hygienically intelligent.

Industry, the store, or college should now furnish similar care consisting in physical examination, with corrective advice, suitable assignment in healthy environment with incentive to progress and safeguards from accident and disease.

An efficient workman needs enjoyable physical recreation. Few men or women over thirty will today seek out such physical recreation, especially in cities where the difficulties are great. Here the community responsibility must be invoked.

The part of the community in the scheme of healthy industrial citizenship begins, I believe, with educating the school girl to be fundamentally a good housekeeper, intelligent mother and a home builder. Next, to furnish her environment and encourage suitable equipment. This means streets, water supply, sewage, parks, supervised playgrounds, supervised movies and dances.

Perhaps the community's biggest responsibility is good schools. A wave—better a river—of physical education today seems to be rising.

By showing physical unfitness the war put a new value on physical fitness. Our knowledge of hygiene is rapidly growing and is already sufficient if sufficiently diffused to prevent the larger part of our physical failures.

E. A. WILSON:[1] Let me say that Mr. Fisher has done a most excellent work and that his chart will be invaluable to me in my work.

I don't agree with the man who has said that labor is one element and that management is another element, and that the elements cannot mix. As long as management takes that attitude there will never be a "formula for an efficient workman."

Once I thought it required a slave-driver to produce an efficient workman. After hearing Arthur Nash talk on "doing business on the Golden Rule," I changed my mind.

I reasoned that my great interest in my business is because it is my business, and that if I wanted interest on the part of the employees I must make it their business too.

The questions of capital and labor could be settled by changing labor into capital.

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[1] President, B. O. & G. C. Wilson, Inc., Boston.

So I organized our employees, both office and factory, into the Wilson Associates for the purpose of making money.

The associates realized that they could earn only so much money with their hands, and that it was not possible for them to do anything in a large way with their money individually, but they were convinced that by cooperation they could do something worth while.

Let me explain here that we are financing our business on the plan of the Golden Rule. We are not offering the investing public an opportunity to lend us their money for seven and eight per cent. We give workers an opportunity to pro rate in fifty per cent of the net profits.

The associates have subscribed for $11,000 worth of our stock. There were less than thirty of them in our organization at that time. As time goes on they will continue to invest in organizations which show and share in the profits, and not simply lend their money.

We have discussions upon the different methods of investment and analyze them so that our associates are rapidly becoming competent to make investments for themselves.

If our concern had adopted our plan and their employees had subscribed in the same proportion as did our associates last year, they would have raised $1,100,000. This would have made them a money power. But they did not.

We want our associates to know the earning power of money.

We want to and we believe we can make each and every one independent if he will stick to us.

That this produces efficiency is proved by the fact that we have never punched a card in our time clock. All it does is to ring bells on the different floors for the hands to knock off work. The associates are ready five tor ten minutes before starting time, and on the job when the bell rings, and work until it rings for them to quit. They wash up and go out on their own time.

The other day when we had some work on the bench that could not be left until morning without serious loss, the associates voluntarily made arrangements to finish up the job then, and although they worked quite a bit overtime, everybody went out happy and without a grouch.

When our new production manager took charge, he could hardly believe the associates were not piece workers and said, "One of your girls will do more work than any three girls I ever hired."

We believe we have the confidence, the respect and the loyalty of every individual in our organization. Why? Because they are no longer employees but business associates. That is why they make suggestions as to the speeding up of the work and elimination of waste.

My idea of a "formula for an efficient workman" is to treat one's employees like human beings and show them how they can get ahead in the world, instead of talking about "the human element in business."

LILLIAN M. GILBRETH[1]: Mr. Fisher's "formula" is evidently designed to act as a thought detonator and as a stimulus for suggestions rather than as a complete outline or working schedule. It has been criticized as "paternalistic" and as not affording room for individual development. We believe, however, that the arrangement, not the contents, offers ground for such criticism, for a reading of the chart backwards shows numerous opportunities for self-expression by the worker in many lines of activity.

In order most quickly to stimulate and suggest development of this formula, every topic given by Mr. Fisher might profitably be expanded, as he has expanded the main topic. It is difficult to resist the temptation to expand on such topics as intelligence tests, motion study, fatigue study, promotion and mental hygiene, all of which have, as have many other topics given, not only a well-thought-out theory, but an established and standardized practice and a well-perfected technique.

We shall take as a sample of this, the topic "task instruction—where necessary." Under this we might profitably put: first, type of work, the work being classified according to the type of learning involved; second, learning process; third, likenesses, i. e., relation to other types; fourth, incentives or motivation; fifth, the one best way to do work or to perform the activity.

Through the units, methods and devices of scientific management, it is now possible not only to classify the work assigned, but to formulate the method to be used for doing the work and the efficient learning process. Thus we have not only *the one best way to do work* but *the one best way to teach and learn the work.*

Mr. Fisher is to be congratulated not only upon the completeness with which he has covered the subject, but upon the excellent wording. No one who has not struggled to express technical ideas in simple terms realizes how difficult it is not to fall into the error of using terms which, while unfamiliar to the general reader, seem simple and indispensable to the man engaged in the special field. Many of the topics in his chart cover sciences with a complete vocabulary and literature, and to summarize their findings and worth to industry in simple, easily-understood terms is an achievement. What is needed is constructive criticism, elaboration, and co-operation.

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[1] Frank B. and L. M. Gilbreth, Consulting Engineers, Montclair, N. J.

Boyd Fisher: (Closure) The question of the relation of industrial democracy to the efficiency of the workman, has been brought up by several of the speakers. It may relate to the question either from an ethical or from a scientific point of view. It may or may not be right, for instance, to give workers control over the conditions of their efficiency and it may or may not be most productive to do so. Neither question depends upon the other, and either may be excluded for the moment from our consideration. At this moment I prefer to consider only the questions raised by science, because not only is industrial democracy imperfectly applied to industry today, but as Mr. Bloomfield has so clearly pointed out, it is a tragedy that the workers themselves are reluctant to assume even their rightful responsibilities in management.

From the scientific point of view, industrial democracy may be urged if it is true that active participation in a program arouses greater enthusiasm and effort than merely passing submission to it. We have given at least a subordinate place to this idea in our chart. The average level of intelligence among workers, and the present state of experience in self government among workers, both seem to impose some limitations upon the value of their contribution, and even act as some offset to the contribution from their enthusiasm.

Indeed, I think it is unsound to rest the case for industrial democracy in industry upon what the workers will voluntarily produce as a result of it, because to do so implies either that they are consciously withholding effort or that enthusiasm will cause them to over-exert themselves.

The main point of this chart lies in the emphasis upon the fact that we ought not look for increased efficiency solely, or even first, to a mere voluntary increase in effort. We protest against all of the propaganda of the economist or psychologist in favor of mere increases in human effort. We prefer to emphasize the surrounding conditions and the tools and appliances which greatly extend or seriously limit the efficiency of any workman. We prefer to consider, first, everything that science and good management can do to prepare the way for the efficient workman. Then we wish to consider the best assignment of each worker according to his natural talents. Efficiency is relative. A moron well placed may be an efficient workman. Last of all do we wish to consider what increased effort even voluntarily given through a workman's own organization may do as a means of increasing efficiency. To depend solely upon democracy for carrying on this program is to rely on false hopes. Indeed, if democracy means writing down progress to the level of average intelligence, it is not a desirable form of organization.

WE have often wondered why it is that, in discussions of industrial relations, so many speakers seem to assume that management's effort to develop the best operating methods is unrelated—sometimes, they seem to assume, opposed—to the best industrial relations. The evidence is quite to the contrary. Those whose minds run on the single track of interest in the relations between employer and employee introduce their list of noteworthy firms in evidence; those whose minds run on the other single track of interest in the best technical methods introduce their list of noteworthy firms in evidence; those whose minds run on the double track of interest in both improved technique and improved industrial relations introduce their list in evidence—and, hehold, the lists are pretty much identical!

Those executives and engineers who start from a genuine interest in improved operating methods soon find that the development of improved methods is dependent upon the good will of workers, and in practice give as much attenton to the latter as to the former. Those who start from a genuine interest in improved industrial relations soon find that the best relations are dependent upon improved technique—improved marketing, which insures more continuous employment; and improved processing, which promotes better working conditions, lower costs and higher wages.

As soon as the effort to develop better operating methods has begun to show results, it will usually be found that better industrial relations have been a by-product; as soon as the desire for better industrial relations has been given expression by concrete, effective action, it will be found usually that better technique has resulted as a by-product.

SALES ORGANIZATION AND METHODS[1]

A SECOND REPORT OF THE COMMITTEE ON THE SALES QUESTIONNAIRE

PRESENTED FOR THE COMMITTEE BY WILLARD E. FREELAND[2]

I. INTRODUCTION

THE purpose of the following questionnaire was to pursue further the line of inquiry begun by the questionnaire reported upon at the meeting of December, 1921. The two questionnaires are however different in details. It was proposed by this particular line of inquiry to secure certain data and to exert a certain influence. The data which it was hoped to secure relates to the general organization and methods of the distribution departments of a number of representative concerns, the extent to which functional lines have been followed in the organization of such departments, and the extent to which scientific planning and scheduling of sales operations is practiced. It was hoped to get behind the diverse terminology which has come into use and ascertain facts in terms of a unifying terminology. The influence which it was hoped to exert was to get sales executives to think of their problems in the large and in terms of logical functions, and make the beginning of a use among sales executives of a terminology already familiar to major administrative and production executives—a familiarity which is necessary if sales executives are to talk with general managers and production managers about problems now recognized as common to all the executives of an enterprise and not problems of any one department.

The ambiguity of many of the answers to the questions in the questionnaire proves that sales executives are not accustomed to think of their organization problems in terms of general principles of organization now familiar to other executives; and also that a standard, mutually-understood terminology is desirable.

The questionnaire was sent to some 175 firms and 45 replies were returned. The data being confidential the following only can be stated concerning the firms which answered the questionnaire: they are fairly representative of firms as far west as Cleveland, Detroit and Cincinnati; of a wide variety of fabricating industries; of large, medium and small concerns; and of concerns which have a national reputation for the excellence of the organization and methods of their sales departments, and concerns which have not such a reputation.

Because of the confidential nature of the replies and for other reasons it is impossible to present what would be the most desirable kind of analysis—one showing the answers of each separate firm. The combination of the answers to the separate questions is instructive. Firms which are "advanced" in organization and methods with respect to the phase inquired into by one question are generally "advanced" also with respect to the phases inquired into by other questions.

The questionnaire, including analysis of replies, is presented first; then general observations.

II. THE QUESTIONNAIRE

A. ORGANIZATION

A 1. Is your sales organization one central unit with main divisions reporting direct to sales manager?

Replies indicate that where distribution is to middlemen who have large sales staffs, sales organizations are centralized to a large degree, the only decentralization being in the field groups; and it would appear that in many cases the field group managers have more responsibility than authority. Where distribution is to retailers, sales agents or consumers, decentralization is the prevailing practice and a larger measure of authority is given to the field division heads.

A 2. Is your sales organization decentralized or sectionalized with sectional groups reporting to district or branch managers?

See answer to question A 1.

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[1] Presented at a meeting of the Taylor Society, New York, Dec. 2, 1921.

[2] Members of the Committee: Willard E. Freeland, Winchester Repeating Arms Co., New Haven, Conn., Chairman; Ralph I. Joseph, The Joseph & Feiss Co., Cleveland, O.; G. H. Kerr, E. I. duPont deNemours Co., Wilmington, Del.; Henry T. Noyes, Art in Buttons, Inc., Rochester, N. Y.; A. B. Rich, Dennison Manufacturing Co., Framingham, Mass.; Sanford E. Thompson, The Thompson & Lichtner Co., Boston, Mass.; John A. Urquhart, W. H. McElwain Co., Boston, Mass.; Harry A. Wellman, Amos Tuck School, Hanover, N. H.

A 3. If decentralized, specify in what respect.

a. Sales groups; b. Warehouses; c. Branch houses; d. Accounting; e. Credits and collections; f. Banking accommodations?

Decentralization into field groups is a common practice of large sales organizations. There is considerable variance reported in the methods of handling warehouses and branch houses. Some have branch houses that are interested only in sales or in a few cases in sales and credits and collections. The branch houses only in a few instances carry a stock of products. The very large industries usually report having field warehouses and a few report carrying in branch houses stocks supplied from central or field warehouses. In most instances the field warehouses are reported as caring for credits and collections and also the accounts of the warehouse zone. In only two or three instances do the reports show that field warehouses or zone officers have separate banking accommodations. One large industry reports that its several branch factories maintain separate sales organizations and have a large measure of independence.

A 4. If decentralized, do you maintain at home office duplicate records of:

a. Salesmen; b. Inventories; c. Accounts; d. Credit rating; e. Statistics?

Where the sales organization is decentralized, the home office usually maintains duplicate records of salesmen's activities and of sales statistics. The question was not so worded as to bring out replies that would indicate the extent to which branch offices maintained salesmen's records and sales statistics. There seems to be about an even split between the maintenance of duplicate inventory records at home offices and of dependence upon monthly reports of inventories from branches. Where accounting is done at branches, only controlling accounts are usually carried at the home office, but duplicate credit records are usually kept.

A 5. If you have branch distributing points, do you maintain centralized stock control?

a. Are stocks requisitioned by branches? b. Is production allotted by central stock control?

This question suffered because it was not framed with sufficient clearness. There is general agreement that centralized stock control is essential. Most of those reporting replied "Yes" to both sections (a) and (b), but the intent of the question was to distinguish between two different methods of maintaining stocks in branches. Further investigation discloses that requests from branches for stock forms the basis of the stock allotment, hence the common answer "Yes" to both sections of the question. One company reports that stock is allotted on the basis of sales records and hence requisitions from branches are not considered necessary.

A 6. Is credit and collection work centralized?

a. In respect to credit limits? b. In respect to standard collection methods?

Replies indicate general centralization of credit work and of setting credit limits. Where field branches are highly organized, considerable latitude on credits is allowed. There is a marked tendency towards standardization of collection methods.

B. PLANNING

B 1. Is sales planning recognized as a function distinct from sales operation?

A larger number than last year answered "Yes," but more than eighty per cent of those replying answered "No."

B 2. Do you differentiate between planning of future problems and current problems?

Two-thirds of those answering "Yes" to the previous question answered "Yes" to this one.

B 3. Do you have an organization specifically to function as a research organization to study: a. Markets; b. Products; c. Competition; d. Plant capacity; e. Prices?

As so few have made any move in the direction indicated by these questions, the group can well be considered as a whole.

One company reports a research unit studying products, competition, plant capacity and prices, but this unit makes no plans or schedules.

Another reports a sales engineering organization doing research work and beginning to make master plans and schedules for the entire organization.

A third reply says that the company has a sales engineering organization and while it is not yet functioning fully on master plans and schedules, "it will."

Another reports that it is moving towards a sales engineering unit, but it is first developing a sales planning unit, now largely engaged on current problems.

In another report is found a sales research unit which does research work and formulates master plans, subject to approval of the sales manager.

The staff of the Vice-President in Charge of Sales is working on the problems outlined in this group of questions, according to another reply. A Planning and Statistics Section prepares monthly budgets and schedules "that attempt to coördinate production, finance and sales."

Two large companies are functioning to some degree in the matters outlined in this group of questions through committees, in both cases master plans being formulated by sales committees composed of major executives of the business.

In another company a management department, "an umpire between sales and production," does research work and master planning.

The reports as a whole show a greater recognition that the work of the planning function exists somewhere within the organization, even though the results of the work are not definitely set forth in plans and schedules.

In every case where it is reported that master planning and scheduling affecting other parts of the organization are definitely organized, the units report to a company executive other than the sales manager.

B 4. If you have such an organization as B 3, does it confine its activities to future problems only?

See answer to question B 3.

B 5. Does this unit (B 3) of your organization work out master plans?

a. If so, what name do you give to this unit of your organization?

See answer to question B 3.

B 6. Does the same unit (B 3) work out master schedules?

See answer to question B 3.

B 7. Do these master schedules and plans apply to a. Work of sales organization; b. Or do they attempt to co-ordinate production, finance and sales?

See answer to question B 3.

B 8. To whom does head of this unit report?

See answer to question B 3.

B 9. Do you have a separate unit in the sales organization to work out from the master plans detail plans for the work of the operating section?

Only a very few replies state there is organized a unit to prepare detailed plans for the sales operating divisions. One report says "not yet, but expect to later on." Another manufacturing company does this planning through a separate subsidiary selling company.

B 10. Do you have a separate unit to take care of advertising and publicity work?

About ninety per cent of those replying have a separate unit for advertising.

B 11. To whom does the head of the advertising unit report?

The great majority report to either the General Manager or Sales Manager, the division being almost even, but slightly in favor of the Sales Manager. In five of the replies, two report to the President, two to the Board of Directors, one to the Executive Committee.

B 12. Does the advertising unit develop its own plans with relation to a master sales plan?

Although most of the replies to previous questions show that companies have no formal master sales plans, nearly every reply to this question is "Yes." Light is thrown on this by the replies to the next question.

B 13. If you have no master sales plans, how is work of advertising coordinated with work of sales operating units?

Most of the replies to this question state that plans for sales and advertising are coördinated by conference of respective division heads. In a very few cases no definite attempt is made to coördinate. A few replied that the Sales Manager or the Chairman of the Sales Committee is also Advertising Manager. In two cases, an outside advertising agency coördinates sales and advertising plans. Where definite master plans exist, the advertising department always works in accordance with the plan. In most cases this has come about since the meeting of the Taylor Society a year ago.

B 14. Do you have a sales promotion unit, not a part of advertising? (By "sales promotion" in this instance is meant work intended to produce by mail an actual sale from a definite prospect; or work by a group of field men (not salesmen) by personal contact with definite prospects which is designed to increase sales or good will by demonstrations or similar methods; or effort to stimulate enthusiasm in, or increased knowledge of product or sales methods by your field force; or other efforts to increase good will for the product and the company.)

Nearly one-half of those replying have no sales promotion units. A little less than one-quarter have such units. The remainder combine advertising and sales promotion in a single unit. Besides "Sales Promotion," these units bear such names as "Direct Mail Advertising Division," "Sales Correspondence Division," "Instruction Division, Sales Department," etc.

B 15. If you have such a separate sales promotion unit, to whom does it report?

One such unit reports to a Selling Committee. About one-third of the remainder report to advertising managers and the other two-thirds to the Sales Manager.

B 16. Do you have a unit of your sales organization to give sales service or selling help to distributors or consumers?
a. Do you operate field men in connection with this unit; b. Do these field men also accept orders for your product?

A small number report that service work is done by either advertising or sales promotion units, but that no field work is done. Of the remainder of the replies, one-half state that they have some more or less well organized service unit. Analysis shows that of this last group one-half operate field men who accept but do not solicit orders. The nature of the product usually determines whether the service work is done with the distributor or the consumer. In a few instances the service work rests with division managers who travel but do not solicit orders. In at least two reports it is stated that one or more field service workers are definitely attached to district sales offices.

C. GENERAL

C 1. Have the changes in market conditions in the past year caused you to make changes in your sales organization? If so, please give changes in detail and such review of causes as you may deem necessary.

It is possible to give an idea of the nature of the replies to this question by brief abstracts from some of the replies.

1. Established more branches for better control and stimulation of distribution. Working steadily to replace distributor by branches.
2. Changes from salary and bonus to straight commission—reduced territories—increased direct by mail advertising—intensive development of new classes of business—larger responsibility on district managers—

revision of prices downward—a quota graduated upward month by month instead of uniformly, to correspond with anticipated improvement of business—results gratifying—quota for year and sales for 1920 exceeded.

3. No change—we have, however, engaged an expert agency to make a general survey.
4. More men—smaller territories.
5. Where new branches had been too rapidly extended, have released some men and given experienced men larger territories.
6. Foresaw depression early in 1920—started training more salesmen and have added other men this year.
7. General curtailment of staff.
8. Distributors have put on more salesmen.
9. More educational material and instruction for salesmen.
10. Sales organization reduced—territories larger—more definite responsibility on branch managers.
11. Rearranged territories for economy and closer control of salesmen by branch offices—keep branch managers better informed on vital facts of business—analytical reports now distributed widely, not kept solely for home office—definitely committed to bonus and control plans for stimulating sales—more effective results—strengthened control of branch stocks to prevent inventory losses.

C 2. When introducing a new product, which unit of your organization plans and schedules the initial stock requirements?[1]

Sales Department, 6; Conference of production, financial and sales executives, 2; Conference of sales and production, 2; Sales operating—Merchandise distributing department—New goods department—Production, Conferring with sales—Supervisor of branches—Merchandising committee—Management department—Department heads other than sales—Purchasing and sales in conjunction—Production department—Branches through sales committee—General manager, conferring with sales and production—Head of firm—Merchandise department—Sales, conferring with advertising—Sales development section—Sales manager—Advertising manager and production manager.

C 3. What unit of your organization plans the dropping of products from your line? Does this unit have full authority to carry out its plans? To whom does it report?

Sales department, 5; Sales, conferring with production; 3, Conference production, finance and sales, 2; General manager, 2; Sales and general manager, 2; Sales operating, reporting to general manager—General officers—Conference sales, production and engineering—Branch factory managers and executive committee—Department heads reporting to president—Management department, conferring with sales—Merchandising committee — Executive committee — New goods department—Members of firm—Sales department recommends, President decides—Sales department after sales research division studies—Sales department initiates, management committee decides—Sales committee—Head of firm—Merchandise department, approval executive board—Department heads and general manager.

C 4. Do you give your factory yearly, monthly or other periodical production schedules? If so, what unit of your organization does this?

Sales department, 4; General manager, 2; Planning division, 2; Sales and production, conferring with management committee—Merchandise distribution department—Department managers, approval members of firm—Stock control committee—Sales and factory planning departments—Stock accounting through sales manager—Individual merchandise managers—Management department—Cost accounting department—Production control superintendent—Planning and statistical section schedules required quantities, planning department of each work determines after considering inventories—Manufacturing committee—Control section—Sales section head—Order department—Managers of production, sales, merchandising and finance—Sales department, reporting to vice-president and general manager—Order department statistical sales department.

C 5. What unit of your organization plans and schedules distribution of products to warehouses or other field distributing organizations?

Sales department, 6; Sales operating, 2; Branch organizations—Branch house manager at home office—General manager—Department heads—Merchandise department—Supervisor of branches and stock accounting unit—Stock control committee—Merchandise distribution department.

C 6. What unit of your organization plans selling equipment for your salesmen?

Sales Department, 17; Sales operating, 3; Sales personnel department—Department managers—Sales and publicity—Assistant Sales Manager—Selling committee—Advertising manager—Branch factory managers—Sales promotion department—Branch offices—Sales committee or branch sales managers—Advertising, sales promotion and sales—Sales planning—Sales and advertising—Sales section head.

C 7. What unit of your organization prepares such equipment?

Sales Department, 10; Advertising Department, 5; Sample Department, 3; Salesmen—Branch offices—Sales operating—Sales Department and factory sampling department—Production—Sales personnel department—Advertising and sales—Sales promotion—Advertising, sales promotion and sales—Sales planning—Shipping department—Sales and production.

C 8. What unit of your organization designs your containers or other packing?

Production, 5; Sales department, 3; Sales promotion, 2; Sales engineering—Department managers—New goods department—Experimental department—Merchandise managers, approval merchandise committee—Manufacturing department with advertising—Special committee (through appointment)—Sales committee—Supply section, service division—Planning—Factory and sales—Sales Planning—Shipping division, merchandise department—Shipping—Production manager, coöperation of sales and advertising managers.

C 9. What unit plans merchandising equipment for your distributors?

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[1] The replies to the remaining questions under the heading "C. General" defy analysis. An abstract of the replies to each is given because they are interesting if only to show the lack of standards in sales organizations and nomenclature.

a. Display fixtures; b. Interior displays; c. Window displays; d. Consumer literature; e. Local newspaper advertising; f. Slides, etc.; g. Other selling helps.

Advertising department, 9; Sales promotion department, 3; Sales department, 3; Advertising department (a—d—e—f)—Advertising department (a—e—c—d—e—f) and sales department (g)—Merchandise committee (a—b—c), advertising department (d—e—f), and selling committee (g)—Sales department (d—e)—Dealer service department—Advertising department (a—b—c—e—f), advertising department and sales educational division (d), sales educational division (g)—Sales engineering and advertising—sales and advertising—Advertising department and dealer service department — Advertising service — Sales department (d—e—f—g)—Sales, advertising and production managers.

C 10. What unit plans new products to be added to your lines?

Sales department, 3; Sales engineering, 2; Conference sales, production and finance, 2; Sales research studies market, factory development department perfects product—Department managers, approval of firm—New goods department—Sales and publicity—Engineering—Merchandising committee—Sales department plans, management department approves—All departments—Managers branch factories in conjunction with executive committee—Engineering Department, approval sales manager—Conference sales, production and engineering—General offices of company—Sales manager or mill sales committee (executives)—Sales and sales promotion—Head of firm—Sales and engineering—Style committee—Sales and research—Sales and production—Sales committee, laboratory or manufacturing committee may initiate—Engineering department, conferring with general manager, sales manager, manufacturing executive, chief engineer and service engineer—Research department and sales development section.

C 11. What unit reports upon activities of legislative bodies and trade organization?

Legal department and sales manager—Staff assistants in President's office and Vice-President in charge of sales—Sales promotion department—General Manager—Sales department, 6; All departments—Legal department—Merchandising committee and sales committee—Unit of executive department—Relations department (legal division of sales department)—Sales engineering—Vice-President in charge of welfare, employment and organization work—Executive board—Research—Sales and financial departments—Outside organizations—Mill sales committee.

C 12. Do you have a separate unit to compile and report sales statistics?

Fourteen replies stated "Yes" without details—Comptroller's department, 2; Sales engineering—Statistical department under comptroller—Statistical division, sales department—Regular clerical force—Statistical department—Statistical division, sales promotion department—Statistical section, finance division—Trade record section, sales department.

C 13. What unit handles dealer and consumer complaints?

Sales department, 13; Service department, 2; Branch sales managers, 2; Service division—Salesmen or special representative of vice-president in charge of sales—Service department under production manager—Adjustment bureau, sales department—Each branch factory—Claim department—Quality committee—Sales and production—Assistant sales manager—Sales and service — Department managers — Sales operating — Order department—Credit, sales and factory departments—Correspondence division, merchandising department—Adjustment department.

C 14. What unit analyzes and reports on seasonal, territorial or economic factors affecting the sale of your products?

Sales department, 13; Sales engineering, 2; Sales research—Department manager—Stock control committee—Merchandise managers—Manager of sales information—Salesmen—Sales department and general management—Sales promotion department—Planning and statistical section—Sales committee and branch manager—Executive Board.

C 15. Do you have a definite method of ascertaining competitive activities and prices?

Nine reports state "Yes" without details—Branch managers—Sales engineering.

C 16. What unit plans the methods of salesmen's compensation?

It is evident that this question was not carefully read by many whose replies indicate that they refer to compensation and not to *methods* of compensation.

Sales department, 20; Administrative, 2; Sales operating initiate, management committee approves—Sales engineering—Sales personnel department—Partners and department managers—General Manager—Board of Directors—Sales operating—Sales and general management—Executive committee—Sales promotion—Executive assistant to vice-president in charge of sales—Sales committee and board of directors—Sales and executive board—Executive department—Sales committee on recommendation of sales manager.

III. GENERAL OBSERVATIONS

The purpose of the questionnaire was to obtain information about the form of organization of sales departments, the extent to which the engineering phases were recognized and scientific planning and scheduling attempted, and the methods of control of important portions of the work of the distribution organization. As the original membership of the Society was composed largely of men engaged in the industries, it naturally follows that the questionnaires were sent mostly to industrial executives. The replies are of value, accordingly, because this sales section of the Taylor Society came into existence as a result of the question raised by a few earnest men whether there are not in the scientific methods of production control lessons that can be applied in sales organizations.

The first group of questions under the heading "Organization" were framed merely to throw some light on the control thought to be necessary when an organization became so big or its distribution plan is such as to force decentralization. In a centralized sales organization, executive ability of its head and his staff may largely counterbalance lack of organized control, but as authority is given in increasing measure to field or branch managers the necessity for a controlling system develops.

Instances are known where decentralization has been carried too far and it has become necessary to call a halt and retrace some of the steps. The danger of losing control through decentralization is always present and affords an opportunity to utilize in sales organization the skill and training of the industrial or management engineer. Thus, in the very foundation of sales work, there exists the need for an application of science to the solution of the problem of proper organization.

If the industrial engineer had had a part in the general planning of sales organizations, there would have been in existence by now some recognized standards of organization, operation and nomenclature. You have only to turn to the answers to the questions in group "C" to recognize that the progress of production organizations toward such standards has not been duplicated in distribution organizations. Many of the latter have just grown like "Topsy," and an attempt to scientifically attack their problems has been in some degree rendered difficult by the lack of science in organization and operation.

Functions within the marketing organization are not organized on clean cut lines, and duties and responsibilities overlap. With duties ill-defined, it rarely happens that real authority can be delegated to division heads, and thus matters of minor moment drift up to the sales executive's desk for decision. Thus many a sales manager, due to lack of proper organization, is so submerged under a mass of detail that he lacks time to do the real thinking and study that will broaden his horizon and increase his usefulness and influence. When you find decisions on matters involving only the distribution function passing up the line to a company executive, you can expect to find the narrow-visioned, overburdened sales executive and the unscientific sales organization. There is a place for the engineer in sales organization—invite him in!

Now let us consider the "B" group of questions. The answers give some insight into the extent and character of the planning that is done in some sales organizations. Do you ever stop to wonder why so many manufacturing organizations are divided into engineering and production groups, each reporting to and their work coordinated by the general manager? Is there any real value in the written plans and schedules by which production programs are guided? Is there any truth in the assertion that some men are thinkers and others doers: that each has his place in industry and that it is difficult for most men to cross the invisible line that separates their respective spheres of activity? The truth is that the scheme of such organization for production works, and so the answer to the last two questions must be affirmative.

Is there any real difference between the tasks of producing goods and producing orders? Is there a place for both the thinker and the doer in distribution? You will agree that there is a place for both. Then it follows that you must recognize the engineeering phases in sales work. Planning, preparation and scheduling must precede production and these are the engineering phases. I do not argue that these must necessarily be set aside as an engineering group, but the manufacturing division has found it advisable to so segregate the thinkers; and distribution, especially when engaged in large scale operations, can well afford to look into the reasons for separating engineering from production in the factory.

One reason why so many decisions must be made by the sales executive is the lack of a well-defined policy, and policies are best established by written plans and schedules. And so we find justification for at least a planning division in sales. In a highly organized distribution machine where different groups are engaged in selling, merchandising, advertising, sales promotion and service work, the absence of plans means endless conferences out of which each man goes, all too often, to apply his own narrow conception of the policy to be pursued.

It is the ordinary practice, and perhaps necessarily so, to let each division make its own detailed plans. Thus there appears the necessity for master plans and schedules. And this necessity for master plans and schedules renews our interest in the engineer.

Somewhere within the organization must be a master plan to co-ordinate the work of all divisions of the business. These master plans must either form the basis for master budgets, or must be the basis for working programs that will operate within budgets otherwise established. Such master plans must be based upon adequate information produced by research or statistics. And so we find planning, research and statistics falling into a natural group. Last year we termed this group "Sales Engineers." The name is not important—the work is.

Why connect this group with sales? Because virtually all the influences that shape the program of a business are at work in the world outside, and it is through sales that their actions and reactions are made known to the business. The amount of products that can be sold determines budgets and production programs. So if you accept the common division of a business into three major functions—sales, production, finance—it is sales that must furnish most of the information upon which a master plan is founded.

You may say that the master planning is a function of management. I cannot agree. The job of management is coordinate, to establish policies. It would be a physical impossibility in a business of any size for the general manager to do the research and statistical work underlying planning, not to speak of the magnitude of the job of writing master plans. He should approve or veto. There is just as definite a place for sales engineering—the planning of programs, as there is for industrial engineering—the planning of methods or systems, or for manufacturing engineering—the planning of products and processes.

If a master plan and schedule is in existence, there is still need for detailed planning in sales and advertising. In a sales organization of size, there should be a planning section. That there is a definite increase in the number of such planning sections is a recognition that the job cannot be delegated to the doer type of man.

There is another definite phase of engineering work in the sales activities of many industries. It is the initial planning of new products or the re-designing of old products for new uses. This task requires the sales angle and ordinarily the information required by the manufacturing engineers must come from sales. The job is true sales engineering.

Again we can support an argument that lack of standardization of products and selling methods is a direct cause of inefficiency and high cost. Another job for the sales engineer.

The gathering of statistics may possibly be done by more or less mechanical methods. And sometimes they are used mechanically. But the big job is the interpretation of statistics and this is a job for the thinker or engineer.

The answers to the questions under group "C" give little opportunity for analysis but much opportunity for discussion.

It appears that control of the sales organization breaks sharply into two types: control by a dominant executive or control through committees. The more technical the article the more does committee control appear. And it appears quite true that the committees perform largely the engineering functions. Without more knowledge of the circumstances in each individual case, there can be no decision whether the meetings of committees can adequately supplant the work of an engineering group which concentrates on highly specialized study and planning.

There also appear to be endless combinations of functional, product and geographical forms of sales organization. Where varied lines of products are made it is common to find the product type of control through merchandising sections, each responsible for distribution of specific classes of product. The section heads are staff and not operating officials. Combined with this in the highly organized industries are functional divisions in the home office (sometimes in the field divisions also) and geographical division of the sales operations.

Where a single product is widely distributed, the functional form of organization is employed, with or without geographical divisions.

Where the same class of product goes to different classes of consumers, the product specialist appears within the functional form of organization, usually specializing on sales promotion but not forming the contact with the production organization.

A sharp distinction should be drawn between decentralization of operation and decentralization of control. Centralization of control means economies and maintenance of standards. Sometimes, however, it means suffocation of that initiative which is the very great asset of decentralized control. Centralization of control means little unless it is based upon an organization with functions so clearly defined and charted that the very perfection of the routine gives men time to do creative thinking.

The replies to the questionnaire indicate that in a surprising number of organizations action is based upon group decisions rather than upon careful compilation and analysis of facts. Research has little definite recognition. I suspect that business conditions of the present and future will help to right what may be wrong in this condition. I forsee a greatly increased interest in research as sales managers begin to run out of alibis for decreased distribution.

There are few organizations that have recognized any distinction between planning for current and future problems. There is a very great distinction. It is this distinction that has caused some companies to create both sales engineering and sales planning divisions. Sales engineering should be largely interested in future plans and programs. It should be engaged in laying a strong foundation upon which later the operating divisions will build a superstructure. It must, if it is to succeed, occupy an independent position, parallel with the sales operating, advertising and other units.

Economists (and business leaders, too!) are attacking the cost of distribution. By the adoption of scientific study of organizations, systems, tools and operations, American industry has been able to obtain low unit costs of production while paying the highest wages. Management, having been thus successful in attacking the problems of production, cannot be expected to long refrain from turning loose their engineers upon the distribution function. They will find ways to cut the cost of distribution and their reports will lay bare the skeletons in many a sales organization closet. Shall we wait to have the engineer imposed upon us by general management or shall we invite him in?

Our standing as a profession with management does not now compare with that of the heads of production and finance. We show a splendid capacity for spending any profits the business may make. Proponents of optimism, filled with ever-cheerful confidence, skilled in the craft of getting an idea across, we do not hesitate to announce plans and establish quotas and to promise all things, and then when we gloriously fail, we are able to produce alibis with which to salve our conscience and to explain to management and directors the red ink figures with which dividends cannot be paid. And then we wonder that the management cosiders us unreliable and hesitates to hand us that $2,000,000 budget with which we are going to put Atlas fluid soap into every kitchen, laundry and bathroom in the land. We must devise ways to measure the returns that are to come from the budgets we spend. We must learn to talk the language of finance, of production, of management. We must bring our organization into line with the scheme of organization that prevails elsewhere in the business. We cannot justify a claim that our work is so exceptional in character that we must be different and our activities shrouded in mystery. We must clean house.

There will arise criticism of the work of this committee. I can forsee now that there will be complaint that we suggest measures that can be made operative in large industries but are hopeless for the small organization.

If we were discussing plans of organization and operation solely, we should find it difficult to refute the charge. But we are primarily discussing functions and not methods. The functions exist and must be recognized in every business, regardless of its size.

We are striving to draw attention to the importance of thinking in terms of functions. We do not necessarily need a distinct head for each function. The fact that one man can head two or more functions is clearly seen in the charts of highly functionalized organizations.

What we need to realize is that the man at the head of two or more functions must clearly recognize in which function he is operating when engaged on any task. Many men have attributes that enable them to operate successfully in several functions. Probably the true measure of real executive ability can be found in the success with which an executive can supervise, if necessary, the operation of all functions.

So the organization and methods of large-scale marketing organizations hold no lesson that cannot be directly applied in an organization of any size. If we will first define the functions of our task, the job of management is then only to assign the supervision of each function to the personnel available. This may sound involved. In reality it is not so if we conceive of every task breaking down into certain definite elements or functions. In the company with which I am connected we recognize that every task breaks into five elements or functions and that these functions—planning, preparation, scheduling, production and inspection—exist in all cases. Accordingly we are organized on the basis of these five functions.

We break our organization into divisions along the major functions of business—selling, advertising, engineering, production, etc.—and then organize these divisions so that the tasks of each division will be attacked through the agency of the further functional treatment of each element of the task as outlined in the preceding paragraph.

I am somewhat familiar with the sales problems of the middleman and the retailer. Fundamentally their sales problems differ only in degree and not in kind from those of the manufacturer. In their organizations the recognition of functions grows day by day. Probably it has been more stress of circumstances and initiative of individuals than logical thinking that has brought this about, but it indicates a trend that will accelerate as scientific teachings spread through our marketing organizations.

IV. DISCUSSION

E. St. Elmo Lewis:[1] I think there are several very important points to bear in mind in the report of this Committee.

1. The self-evident condition among the sales departments in the country, which clearly show a lack

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[1] Campbell-Ewald Co., New York.

of realization of what a functionalized organization means.

2. A hesitancy to grasp the real conditions confronting us in the sales work, and the consequent dependence upon the improvisation, stunts, and the so-called personality of the salesmen—three things that have been responsible for most of the sales failures in the past.

3. The very hopeful sign, in the relatively large number of answers to the questionnaire, that the sales departments are very anxious to know what the Taylor system, or any more scientific method of operation, can really produce.

I think one of the great difficulties will be, as it has always been in the past, to realize that the scientific method cannot be applied to a sales department over night, that it is not something that is to be taken in a capsule or can be read in a book, but it is a process of education that must be sympathetically considered, and receive the most hearty cooperation of the general management, and that it must have the most competent and skillful handling by those who are to operate it.

My own observation suggests that there has been a very strong development of sentiment in favor of carefully considering this movement from a sales standpoint, and both the sales and advertising managers are much more hospitable to the idea than any time in the past five years.. Therefore, the committee of the Taylor Society can well afford to develop the work along the logical process that they are pursuing.

We need not be discouraged by the criticism of the engineer who wants us to discuss plans and methods, and the application of scientific management to sales problems, because there has been very little of it done. We are in the stage of propaganda which always should precede performance—which, as a matter of fact, always does; and these meetings with their tendency to "spread all over the lot" in discussion, are merely symptomatic of the keen interest which a large number of men, who have had little experience in the application of scientific principles to the art of selling, have in this whole subject; and I personally know that, since this committee work was initiated, a number of sales managers have been applying in a tentative way, with more or less success, the principles brought out as they have understood them.

This is interesting, instructive, and progressive—the rest will come in due time.

C. S. YOAKUM:[1] In connection with this interesting new departure of the Taylor Society in investigating the problems of the sales organization, I have enjoyed re-reading Taylor's "The Principles of Scientific Management." On page 130, in a footnote, I found what Mr. Taylor calls "the four great underlying principles of management." To quote, these are: "First, the development of a true science; second, the scientific selection of the workman; third, his scientific education and development; fourth, intimate friendly cooperation between the management and the men." Three of these principles directly involve the careful systematic consideration of personnel. The first is the task that this committee of the Taylor Society has set itself in the two preliminary studies it has made. We can see ahead to the problems that confront this scientific society, if they carry out Mr. Taylor's program and influence the development of scientific management in sales organizations.

I am impressed with the fact that the preliminary clearing of the ground has been done by the two studies now made. Detailed investigations are in order. Functional divisions are shown to be far too fluid and shifting. Time studies of the job are essential if we are to have a basis for finding the points where improvement must begin. What is spoken of in the shop as "routing of materials" is undoubtedly one of the weakest spots in the field organization. *The unit of investigation is the salesman with his equipment in the presence of a prospect, making a sale.*

Like the investigations of Mr. Taylor and the principles of all careful research, the development of a plan is based on these detailed investigations. In the study of the individual salesman we shall find the requirements of the sales organization. The nature and form of the overhead sales structure is determined essentially by the operation of this unit. Comparative statistics are useless without this form of research.

Actual experiments show that the time-study man can be used here. It is as essential to plan carefully in these experiments as in those conducted in the plant. The content of the training course is best derived from such studies. The so-called academic theorist has been far distanced by some of our business men who have sat in their offices and prepared training courses for the salesmen in the field. A little study will also show that the salesman is often justified in his complaint that he does not get the prompt and intelligent cooperation of the agency and home office, needed to make sales. These findings emphasize the point that research must begin with the actual selling units. We shall then know scientifically the required nature of the organization and the form that sales research, sales promotion, master planning, scheduling, advertising, sales portfolios, etc., should take.

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[1] Director Bureau of Personnel Research. Carnegie Institute of Technology, Pittsburgh.

HENRY S. DENNISON:[1] Our experience in applying Taylor principles to factory management led us to take preliminary time studies of salesmen "on the job" as an aid to definition of and analysis of the salesman's work. From the time studies taken, we found that our hope of improvement was to be based (as it had been in the factory) on the salesman's being enabled to utilize his time to better advantage as a consequence of a more careful planning of his work, and on a more definite acceptance of responsibility for the planning on the part of the sales manager.

The factory experience has been that waste is not due to the employee who is lazy or inefficient so much as to a lack of acceptance on the part of the management of its responsibilities, and a lack of proper organization to carry out those responsibilites—also a lack of standard accepted practice that is definitely written up; therefore the gains in factory management from reorganizing in accordance with Taylor principles comes from releasing the operators from conditions of work that make for waste and delay, and correcting these conditions so that with no greater effort on the part of the operator, noticeable improvements in productivity are possible.

Our preliminary time studies of the salesman's work showed us that the actual contact of salesman and customer occupied a small portion of the salesman's time, about fifteen per cent, in fact. Travelling has taken about forty per cent, waiting from fifteen to twenty per cent, and miscellaneous clerical and other work about twenty-five per cent. It is apparent that even if we could greatly increase the salesman's energy and activity under these conditions, he could only add a little to the present fifteen per cent of effective time. Our proper course is to utilize some of his unproductive time by means of more careful planning.

Accordingly, in two of our twenty-five selling districts, we have made up lists of prospective customers, and arranged them both by classes of trades and by geographical locations, and we have increased the District Manager's clerical force so that the clerical work of the salesman may be reduced to a minimum. Furthermore, the salesman's work is carefully planned out in advance of its execution.

For instance, in the case of the city salesman who works out from the district office, when he arrives in the morning, the records of the prospective customers he should call upon are ready for him in geographical order with a report slip for each of those several customers, which calls for a minimum amount of entries to give a complete story of the call. The samples of merchandise that will interest these particular customers are prepared and ready, and also any information that will be of value to the salesman. When the salesman returns at noon, having gone as far as time allowed on his schedule, he simply turns in the samples, records, and reports he has been carrying about with him in the morning, and finds ready for him a complete new outfit for the afternoon. We have found that lack of information about the prospective customer, and what occurred in previous calls, means a certain amount of time wasted in getting the lay of the land in every new call, to say nothing of the more intelligent reports that can be made when the salesman has the complete story of the prospect before calling.

Under this plan, the salesman is furnished record cards plainly and neatly filled out, showing sales, lost orders, items bought, date that prospect will be in the market, and any other information of value taken from report slips of previous calls. A glance at the card brings the salesman up to date, while practically ten minutes or so of talk would be required under ordinary circumstances.

Where the salesman is given a certain amount of territory, and planning is strictly an affair of the salesman, he must ordinarily spend a considerable part of his time, either on the street or in the office, in planning his work. He is rather more than less a free agent, and the basis of decision naturally varies with the different types of men. Under the new plan, however, he is relieved of the responsibility of determining who shall be prospective customers of a concern, and who not. It is surprising what large returns are obtained from careful planning of the route that salesman should take in making these various calls.

It would seem that we shall be able to describe our experience in sales planning and the organization of sales under Taylor principles more and more in terms of corresponding experience in factory management. The definition of responsibility as between the management and the employee, while an abstract principle in itself, brings wonderful returns in practice, because it fixes standard practices as to not only the right way to do work, but in fact, the only way; and still further, the easiest way, thus insuring that the line of least resistance will coincide with the line of greatest efficiency. In consequence, the many things that were formerly suggested as improvements in practice, and that were supposed to be done, and under ordinary management were only occasionally done, or done by certain individuals, become under the new order the only way that the work is done or can be done, and with results commensurate with the degree of perfection embodied in the standards.

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[1] Dennison Manufacturing Co., Framinghm, **Mass**

It has been suggested that such a system would tend to limit the salesman's initiative and it must be admitted at once that this is quite true, as far as the salesman's initiative to determine which prospective customers he should call on, and which lines of goods he should offer for sale; but not at all as to his real salesmanship in the presence of the customer. So far we have found that salesmen have accepted the planning with heartiness, and have helped tremendously in its perfection. There is nothing in any system that cannot be perfected or spoiled by the spirit and intelligence of those who are using it. The suggested plan of operation is designed as an aid to the salesman and has been accepted by them in the spirit in which it was designed. The particular salesmen affected so far find that their opportunities for initiative and originality are ample under this plan, as far as we have gone.

E. C. Johnson:[1] I think Mr. Dennison's interesting explanation should be clearly understood, and that no one should go away from here and report that according to the Dennison investigation all salesmen sell only fifteen per cent of the time. Salesmen usually put in a good day's work; Mr. Dennison's point is that, of the salesman whose work is not planned and scheduled, so much of his time is taken in planning for himself, in travel and in getting entree to customers, that only fifteen per cent of his time is spent in actual sales talk with the customers. Now I do not believe that percentage will hold good for all lines, for I know of many salesmen whose work is carefully planned and scheduled. But it is interesting and impressive to have figures resulting from careful studies of the utilization of time by salesmen whose work had not been carefully planned and scheduled.

John M. Bruce:[2] It seems to me that the sales executive has a far more important job on hand at the minute than a study of the number of calls a salesman should make and the amount of time that a salesman actually spends in productive work, important as these things undoubtedly are.

During the life time of most of us who are now in business we have been enjoying a period of prices that marked a steady rise. Of course, there have been set-backs and slumps in prices, but for the past twenty-five years the whole trend of commodity prices has been steadily upward until a year ago. During this last year we have had a sharper and more drastic decline in prices than has ever occurred, so far as I know, in business history; at least in modern times; and we can look for a continued downward tendency in prices for the next twenty or twenty-five years.

This means that the careless methods of doing business will no longer succeed. We cannot make goods, put them in a warehouse, and have them increase in value before they are sold, so that we get more than a trading profit. We have got to watch turnover and watch it keenly every minute. We have got to analyze profits in every line and see to it that the sales force is geared up, not simply to sell volume, which has been all that it was necessary to do in the last twenty-five years, but geared up to make profits; and if a sales force is geared up to make a profit and is shown how to make a profit and given a share of the profit in direct proportion to the share of the profit made in individual cases, a great deal of the sales problem will thereby be solved.

This means, of course, a far greater burden on the executives than they have had to bear in the past. Management for volume has been the history of distribution during the past twenty-five years; but the concern which fails to give this study and analysis, to watch its production, to speed up its turnover and analyze the profit on each line, is going to have an increasingly more difficult job staying out of the receiver's hands.

One other thought: A great many concerns are doing excellent advertising work and some of them are doing very fair sales work, but there are very few concerns which coordinate sales and advertising and carry them along so that they secure the maximum advantage from their advertising expenditure, translated directly into profitable sales.

I understand there is a concern in Boston called the "Tell You Where Company," which is making considerable progress. The purpose of this concern is to acquaint readers of magazines, who call up their telephone number, with the places where nationally advertised products can be secured; and they charge a fee, which I think is twenty-five cents, for each answer which gives the inquirer the name of the store where the nationally advertised product can be purchased.

It certainly is a deplorable fact that an advertising agency or sales manager can have so little consciousness of the tragic sin of omission by recommending such a service to a company. No better or clearer proof could ever be given of the awful lack of coordination between advertising and sales as such a recommendation on the part of a sales manager or agency.

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[1] President, H. A. Johnson Co., Boston.

[2] Webb, Kendall & Bruce, New York City.

WHY MEN ARE WITHOUT EMPLOYMENT[1]

MISCALCULATION OF DEMAND INTENSIFIES THE UPWARD AND DOWNWARD SWING OF BUSINESS

By Arthur Cecil Pigou[2]

IN social as in individual ills the first step in the search for a remedy is to understand the nature of the disease. Unemployment is a social malady of which we have had repeated experience. The present outbreak is more widespread and more serious than any others of which there are statistical records; but it is not different from others in essential character. Experience of the past and analysis undertaken in the past are, therefore, relevant to present diagnosis. In this article I shall ask two questions. The first is a general one: While, as everybody knows, an enormous mass of human wants remain permanently unsatisfied, how is it that, from time to time, in all countries of the world, a great number of men are thrown into involuntary idleness? The second question is: In what way is the abnormal volume of unemployment that exists now, as compared with other periods of depression, to be accounted for?

The industrial population of this and every other country is divided into a number of groups of people, each group containing in various proportions employers, providers of capital equipment (including land), technical staff and manual workers, and each engaged in some branch of productive activity. The members of each group consume, of course, some part of their output themselves, but, in the main, they exchange it against the output of the remaining groups or of corresponding groups outside the country. The size of the different groups is determined by the tendency of people so to distribute their capital and their mental and manual capacities among different occupations that no one of these is obviously more advantageous than another to a man making choice between them. If everything were working smoothly in a "stationary" state, every group would have exactly as much work to do as it wanted to have, and would obtain regularly, for the proceeds of that work, exactly the amount of other people's products that it had reckoned to obtain when it began its own work. The actual world, however, is not in a "stationary" state, and, consequently, these ideal conditions do not prevail.

WHY DEMAND SLACKENS

On occasions the output of one of the groups in the country, or of one of the groups outside which trade with the country, falls off in consequence of bad harvests, war, labor troubles, or some other cause. When this happens, the group affected will not offer so much of its product as before in exchange for the products of the other groups. Again, it will not offer so much, if, in the recent past, it has for any reason purchased exceptionally large stocks of the products of other groups and so does not, for the time being, need any more of them. In circumstances of this kind the real demand for the products of some, or all, of the other groups falls off, and, in general, therefore, they do not care to work so hard or produce so much of their own product as before.

These fluctuations are made larger than they would otherwise be, because in modern industry many processes of production take a long time, and so each group has to adjust its action, not so much to actual real demands from other groups as to forecasts of their real demands. The way is thus opened up for error. When there is an actual increase, or good ground for expecting an increase, in the real demand for its stuff, an industrial group, warmed in the rising sun of prosperity, often imagines that the outlook is better than it really is. This sort of error is infectious. Each of the groups severally becomes unduly optimistic about the future real demand of the others collectively. Each expects to get, say, twice as much of other people's stuff as before if it provides half as much again of its own; and it decides that this is worth while. When things have worked themselves out, however, it is found that each has produced only half as much again as before. This half as much again is exchanged for the half as much again produced by the others, that is, on much less favorable terms than had been expected. Consequently, every group is disappointed. Its error of optimism tends to turn into an error of pessimism. Just as it had before overestimated the prospects of the demand of the other groups, so now it underestimates them. If some real cause of falling demand, such as a bad harvest, comes into play at the same time, the significance of this also tends to be exaggerated. All the groups now see life blacker than it is, just as before all of them had imagined an unreal brightness.

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[1] This article appeared first in the *Contemporary Review* and later in the *New York Evening Post*, Dec. 20, 1921, p. 8. Reprinted here by permission of the latter.

[2] Arthur Cecil Pigou is one of the foremost British economists. He has been Professor of Political Economy at Cambridge University since 1908 and is the author of "The Riddle of the Tariff," "Unemployment," "The Economy and Finance of the War," and other notable volumes.

PART PLAYED BY MONEY

These outbreaks, and the swings of business activity that are responsible for them, would take place under the influences I have been describing even in a world in which money and banking were unknown. In the actual world they are intensified by reflex price influences. In "good times" people turn over their balances more often than usual, and also enlarge them by borrowings from banks. The result is that prices go up. Fixed interest payments, however, do not go up; and wages, though they tend ultimately to follow the price movements, are apt to lag behind. This means that business men in good times secure a sort of bonus at the expense of people in receipt of fixed incomes and, in a less degree, of wage earners. This spurs them on to further optimism and drives the boom higher. On the other hand, in "bad times" bank balances are turned over less rapidly and reduced in amount, with the result that prices fall. But fixed interest payments do not fall, and wages, though they tend to fall, again lag behind prices. This means that business men are compelled to pay a sort of tax to people in receipt of fixed income and to wage earners. This intensifies their losses, magnifies the discouragement from which they are suffering, and causes them to contract their operations more violently than they would otherwise need to do.

It is not, however, solely or even mainly to the war dislocations that the present industrial depression is due. In great measure the world collapse is an aftermath in consequence of the world boom that preceded it. It is the downward phase of an abnormally intense industrial cycle. During 1919 and 1920, with Governments everywhere continuing to finance themselves by bank credits and paper money, prices moved rapidly upwards, and business men found that they could always sell their stuff for much more than it had cost them to make and hold it. Everybody perceived the terrible dearth of goods in war-ravaged countries, while many failed to realize that real demand is constituted not by needs only, but by needs combined with power to buy. Intending dealers, therefore, placed orders and made purchases with reckless improvidence. The banks since the export of gold was banned, were no longer forced to protect the specie reserve by their own prudence and were anxious not to embarrass the efforts of their Governments to raise or renew loans. Consequently, they delayed to apply to a too exuberant industry the well-tried brake of heightened money rates. Masses of goods of all sorts were piled up in anticipation of high-priced demands, and it seemed that an era of fabulous prosperity had dawned.

BURSTING OF THE BUBBLE

This state of things could not continue indefinitely. The gains that rising general prices bring to business men are obtained by the secret mulcting of those persons who depend upon fixed money incomes. This source of gain is not inexhaustible; for, if prices rise far enough, the real value of previously existing fixed incomes will practically disappear. But over the greater part of the world this ultimate cure of an inflationist boom has not been called into play. The weight of accumulating stocks frightened people; the outcry against rising prices swelled continuously; the demand of the laboring class for a larger share of the business man's abnormal profit became more insistent; the banks, more and more extended with increasing loans to carry the growing stocks, at length raised their rates; people began to be afraid that the upward movement of prices would not continue or might even be reversed. Then the boom broke; orders ceased abruptly; holders of large stocks were forced to realize at a loss; prices, after a slow start on the downward path, tumbled headlong. The slump is abnormally intense because the boom it follows was abnormally intense. Men's minds had swung towards business optimism with extraordinary violence; the sequel is a reaction of like degree. In short, confidence has been shattered, and confidence is the mainspring of industrial activity.

Whatever policy, therefore, is adopted to palliate the urgent and widespread distress to which the present depression and the unemployment that accompanies it have given rise, the fundamental need is a recovery of business confidence. But confidence is not easily restored while the currencies of the greater part of the world remain disordered; nor is it easily restored while political conditions are inchoate and obscure. An improvement in political conditions would, moreover, enable Governments to deal more firmly with their currency difficulties, and so would indirectly, as well as directly, help the return of confidence.

Three years ago the war ended. Since then there has been an interregnum of neither war nor peace. Let the interregnum also end.

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EDITORIAL COMMENT

We have reprinted Professor Pigou's article with a purpose. We want members of the Society to approach their problems of administration and management from from the point of view of social forces which influence the conduct of their businesses, as well as from the point of view of internal technical management. Some of these social forces powerfully restrict internal management and prevent a full realization of the excellence of internal management. Many of the ills which arise from unfavorable social influences are remediable if the causes are understood and joint effort made to correct them. Joint effort, we say; for while an executive individually cannot be other than the helpless victim of these forces, in groups executives can remove or modify many of them.

Every executive has two classes of problems, *both pertaining to the conduct of his own business.* To one class belong the problems of internal technical management. To the other class belong the problems arising out of the economic environment. No executive has answered all his executive responsibilities if he neglects the latter class of problems. The time has passed when the big executive can sit down in the face of adverse economic conditions, wring his hands like an old woman, and expect sympathy. It is time for him to get together with other big executives and control the economic environment to the extent which is possible. And in that connection he must do some clear thinking, or he will bungle the job—or by default permit poorly selected representatives in the Congress to bungle it for him.

The thesis of Professor Pigou's argument is indicated in the sub-title, "miscalculation of demand intensifies the upward and downward swing of business." Now the upward and downward swing works havoc with good management. The rake-off on the upward swing does not compensate for the disorganization and losses on the downward swing in enterprises which are essentially processing in their nature and not speculative, and in the case of the latter it is of the fortunate few that we hear, not of the unfortunate many. One of the objectives of associated big executives should be to minimize this upward and downward swing.

At the present time, of course, the problem is much complicated by circumstances which have arisen out of the war—such as political difficulties and unsettled currencies; but there are two points at which attack may be made on the problem at any time.

If the upward and downward swing of business is intensified by miscalculations of demand, then the first attack is right there—something which will reduce miscalculation. This, we conceive, may be accomplished in three ways: One way is by a better technique in estimating demand through better analysis of the market —more and better sales engineering. This statement may divulge the reason why the Taylor Society is giving attention to sales management. Another way, more far-reaching in its effects, is to inaugurate a system of production statistics, currently gathered and promptly available. The attention of the membership was brought to that through Mr. Carl Snyder's address published in the October BULLETIN. Recently, in a pamphlet which every member should read,[1] Col. Leonard P. Ayres has recommended production statistics. The third way is by the careful study on the part of executives—especially administrative executives and sales executives—of the position business may be occupying at any moment in the business cycle.[2] Statistical services and special reports—the services of Harvard University and of Roger Babson, monthly reviews of the Federal Reserve Board and of the National City Bank, and such special studies as are cited in the footnotes below—can be made to serve the executive as charts and tables serve the captain of a ship.

The second point of attack is with respect to the currency system; not a change from the gold standard, but a stabilizing of the dollar. This does not present so easy a problem as the first method of attack, but that is all the more reason why serious study of it should be made. The principal reason it is a difficult problem is psychological—it is not understood. Study and understanding often remove what has seemed to be mountains of difficulty. Professor Fisher's article in the August BULLETIN was intended as a help in that direction.

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[1] "Price Changes and Business Prospects," published by the Cleveland Trust Co., Cleveland.

[2] See "The Business Cycle," a reprint of articles which have appeared recently in the *New York Evening Post.*

EXCERPTS

THE following article is reprinted, with permission, from the December, 1921 issue of *Management Engineering*. It is a reply of Frank B. Gilbreth to the editorial which appeared in the September, 1921 issue of *Management Engineering* (reprinted in Vol. VI, No. 4, of the BULLETIN) which was concerned with the time-study symposium which appeared in Vol. VI, No. 3, of the BULLETIN.

We desire to call attention to what we believe to be misstatements in your editorial on page 188 of the September issue of *Management Engineering*.

1. Your title "The Time-Study Controversy" leaves out an important part of the controversy, namely, "motion study." This is not merely a "time-study controversy."

2. Your statement in Paragraph 1, that "the majority of the points raised still seem to be at issue, because of the absence of facts and quantitative data," seems to be unwarranted, because: (a) The numerous notes and references quoted, in addition to the paper itself, give all the facts and quantitative data needed to prove the case, and (b) The Managing Director of the Taylor Society stated that:

"The proponents of the stop-watch, on the other hand, seem to concede what is claimed for micromotion technique with regard to the above characteristics (a simple, matter-of-fact concession, however, unaccompanied by any statement of their valuation of what is conceded) and focus their discussion on the determination of standard times and standard rates for current use. The definite point which remains at issue, therefore, seems to be whether the stop-watch technique is so 'unscientific' as to be unsuitable for the determination of standard times and standard rates as a basis for current wage contracts."

Therefore, they have already conceded all points but one of our indictment.

3. In Paragraph 2, you state "there seems to run a lack of appreciation of perspective." It must be remembered that the micromotion method records the one best way to do work, and records and transfers the skill and education of the worker and his foremen, not merely the time that it takes a certain worker to do work under the existing conditions, which cannot possibly be recorded with a stop-watch.

Examine any stop-watch time-study in any book now published, and you will see exactly what we mean. The time element of any one individual worker's work is perhaps the least important of any of the features of the motion study. The recording of the one best way to do work is the principal feature and the most valuable.

4. We are unable to see your viewpoint or reason for ignoring the fact that the micromotion method does not entail taking pictures any oftener than is necessary to obtain the desired facts. "Boring and turning 16-in. gun forgings" is not a stranger to us. On such work it is sometimes advisable to take pictures on some parts of the operation not oftener than, say, once in 15 min. or once per hour—perhaps even less frequently.

It is not to be supposed that engineers of more than a third of a century's continuous experience in motion study in managing large numbers of men will continue to take pictures that have no value. Obviously, when there are no changes in the surrounding conditions and no motions to record, it would be silly or subnormal to take pictures. In any case, we have again and again emphasized that the *times* are of little importance without *accurate records* of the surrounding conditions and the methods used. These the stop-watch cannot give, and neither can the 8-day grandfather's clock. Yet these are fundamental requirements for the transference of skill most efficiently in the one best way.

5. In Paragraph 4, you state "The editor of the matter appearing in the *Bulletin* asks for further evidence, particularly in regard to actual times and costs." To this we reply that immediately upon reading his request we called upon him and informed him that we were ready to do our part. As evidence of this we delivered a second indictment before the New York Section of the Taylor Society, September 15, 1921, and at that time stated:

"We are perfectly willing to present all the additional facts that may be required. We have all the material ready at the present time. We have among our files and data over a million lantern slide negatives from which to select to exhibit for proof of these facts. We also have much stop-watch time-study available. We also have micromotion study and stop-watch data that were made simultaneously. When the comparisons are made, the proof is certain that the only reasons for the continuation of the inaccurate non-recording stop-watch are the ignorance of the employers of the inadequacy and wastefulness of the stop-watch methods and results, and the lack of knowledge of the stop-watch proponents of the technique of motion study, micromotion study, and the chronocyclegraph processes for obtaining better methods. We are willing also to review stop-watch time-study in detail, and we are willing to make new studies in competition with the stop-watch time-study process, if the stop-watch proponents are not willing to use their data of the past to prove their case."

This offer we repeated later to the Director of the Taylor Society and it stands open at the present time.

6. Regarding your Paragraph 5, where you question the relative accuracy of the stop-watch and the micromotion recording devices, we think this is sufficiently answered in our paper and discussion. However, we will state that accuracy of time without records of method can hardly be considered as competing with photographed time with the complete record of all motions and surrounding conditions.

Regarding the statement "even the application of a microscope to the films themselves cannot possibly show the condition of repair of the machine, the correct shapes and settings of the tools, nor the spindle revolutions and the feeds of the machine observed"—we would say, if anyone who fails to understand or who doubts these possibilities will call at our laboratory, we will show him that we can record all desired information much better than has ever been possible with the stop-watch method. What is more, we would like to emphasize that we have always from the start, and without exception, done such recording.

We desire to state emphatically that we can do much more than photograph "the correct shapes and setting of the tool," and "the spindle revolutions and the feeds of the machine," for we can record on the photographic micromotion study films the shape of the tools and the chemical composition of the high-speed steel of which they are made. We can also show plainly and beyond question the skill and past experience of the observed worker. This also we will be pleased to show anyone who will call at our laboratory (by appointment).

7. We can scarcely answer the question in Paragraph 6 as to the comparative degree of skill needed "to interpret stop-watch observations on the one hand, and the motion-picture films on the other." We cannot conceive how stop-watch observations of motions and skill *can be interpreted* when there is no record whatever of motions or skill. The micromotion records are interpreted by the simultaneous motion cycle charts which were referred to in the *Bulletin*.

8. The question in Paragraph 7 of the relative cost of stop-watch time-study and of micromotion study is already answered in the *Bulletin*. We will say again, however, that, all things considered, the micromotion method is the cheaper because it will pay for itself from the first. Furthermore, we will gladly take micromotion study records gratis, and furnish a positive print, free, of the best man obtainable doing the work in the one best way to do work. His priceless skill is worth much more than the insignificant cost of the film. This surely answers the "How much?" question.

Regarding the criticism in Paragraphs 8, 9 and 10 of our statistical quotations, we would suggest that this point be left to any experts in statistics. The criticism contained in these paragraphs was taken by us to such statistical experts and all those consulted agreed with us in every particular. Moreover, we desire to state that we are entirely satisfied with our wording exactly as you have quoted it. We might add, however, that almost invariably we have found that the "lowest time," which is frequently discarded as being "abnormal" under the stop-watch method, is often found to be nearer correct than the "average" of many observed stop-watch times. There are always other factors than the personal errors of the observer, for neither the method nor the effort of the worker is ever twice exactly alike. Therefore, "first year statistics" do not apply.

We believe that, in the light of the above facts, if our indictment of Stop-Watch Time-Study is reread it will be seen that stop-watch time-study is fully as "inaccurate as the indicters of stop-watch time-study would lead us generally to believe."

WE abstract the following "inferences" from "Industrial Government" (Macmillan and Company), by John R. Commons and eight assistants. The book is the report of a study of industrial government in eighteen of thirty establishments visited in the summer of 1919. It will be of interest to members of the Society to know that among the eighteen plants described—the studies of which led to these inferences—were The White Motor Company, The Link-Belt Company, The Joseph and Feiss Company, Wm. Filene's Sons Company, The Dennison Manufacturing Company, The Printz-Biederman Company, The Plimpton Press, Hart, Schaffner & Marx, the Labor Adjustment Board of Rochester, all of which are more or less closely identified by sustaining or personal membership with the Taylor Society.

From 10 per cent to 25 per cent of American employers may be said to be so far ahead of the game that trade unions cannot reach them. Conditions are better, wages are better, security is better, than unions can actually deliver to their members. The other 75 per cent to 90 per cent are backward, either on account of inefficiency, competition, or greed, and only the big stick of unionism or legislation can bring them up to the level of the 10 per cent or the 25 per cent. . . . .

No one can squarely defend all of the restrictive policies of unions, but if they are carefully examined, as we have tried to do, they will be found to be not so very different from the restrictive policies of employers and of non-unionists. . . . . In all cases these policies have their source in the knowledge that there is not, at all times, enough work to go around. . . . . The workers were restricting output in 1919 in order to spread out the work or make more wages out of the apparent prosperity—then the employers were restricting output in 1920 in order to keep up prices in the evident collapse. . . . . It would seem that what is needed by both is "stabilization and standardization." . . . .

We do not find that "labor" wants participation in the responsibilities of ownership or management. . . . . In fact, the whole history of labor organization shows that "labor," as such, cannot manage industry. . . . . Labor, as such, is made up of young laborers and new laborers continually coming in, without experience or discipline. It is even immoral to hold up to this miscellaneous labor, as a class, the hope that it can ever manage industry. Labor, as such, in control of industry breaks down on discipline, on credit, on depreciation accounts, on planning for the future, on finding managers who can shoulder responsibility. But if it seems to succeed in these points, it is because certain *individuals* succeed, and then those individuals immediately close the doors, and labor, as a class, remains where it was.

What we find that labor wants, as a class, is wages, hours, and security, without financial responsibility, but with power enough to command respect . . . . then so much the greater is the opportunity and responsibility of management. Management, then, becomes responsible, not only to the stockholders, but also to the workers and the nation. . . . .

Modern capitalism has been built up on security of investments. It is not labor, or management, or machinery that produces wealth—it is the credit system, and the credit system is nothing but confidence in the future. . . . .

But, while capitalism is based on security of investment it has not provided security of the job. . . . .

The outstanding fact in our investigation is the importance of Management. . . . . It is management that attracts capital through the confidence of investors, for the bulk of investors, like the bulk of laborers, do not want and cannot manage industry. . . . .

On the whole we have seen enough, in these establishments and others, to be convinced that management can provide security for the job if security is deemed important enough. . . . .

The concerns that we visited have shown that it can be done. . . . .

JOB standardization may be defined as the method of determining and applying standards of operating in productive and distributive enterprises for the purpose of increasing production and lowering costs. . .

The results of job standardization are . . . . (1) increased production per machine or individual, of better quality at a lower cost; (2) establishment of better labor relations. Both of these results are due to the same cause; that facts in the hand of the management as well as in the hands of the employees have replaced half-knowledge and rule of thumb. . . . . Neither result, however, can be attained unless job standardization is undertaken as a part of scientific management. . . .

The standards are formulated in terms of time, because, . . . time is the yard stick by which to measure the effectuality of each element and operation. . . .

The standard time should first be found separately for each element. . . . .

Standards will not remain standard very long unless written instructions are drawn up covering every factor in detail. . . . .

The work of job standardization cannot be considered complete until the standards are actually put into effect. . . . . (Wm. O. Lichtner in *Time Study and Job Analysis*, pp. 16, 18, 38, 43, 44.)

THE chief sales executive . . . will do well to give himself plenty of leisure and freedom from detail, and plenty of counsel of a high creative order, so that the best creative brains may be focused upon the great major problems and opportunities in that business . . . Salesmanagement to-day . . . dominates the entire business . . . since all the departments of business rely upon the salesmanagement for their instruction and planning, the salesman-

Graphical Methods of Schools, Colleges, Statisticians, planning. It must use every tool, research, invention and investigation—but in addition must apply imagination and vision in generous measure if it would keep ahead of the march of time. (J. George Frederick in "Modern Salesmanagement," p. 364.)

ABSTRACT of remarks of W. L. Carter, Treasurer, Nashua Gummed and Coated Paper Company, Nashua, N. H., at the first meeting of the New England Section of the Taylor Society—Boston, May 6, 1921:

Of course, every one in this room is keenly interested in the development of scientific management, but I wonder how many of you recognize how widespread the interest in it is. I have made several trips to England in the past few years, returning from my last trip only a few weeks ago. There has been the biggest change in the attitude of the English manufacturers since the war. The old "stand-patters" have been left in the background. Today, they are keen for production. Their newspapers frequently have articles on production in American mills. They gave tables of wages, comparing the English wages and American wages—tables showing the number of employees per machine in an English factory and an American factory in the same line. All these tables show that the American gets greater production with fewer men. In many cases the unit wage cost on account of this increased production is no greater than the English and they are making a very close study of our methods here. I met several American industrial engineers in London who told me they have more work than they can do. The Englishman has always been rather hesitant to scrap his old machine so long as he "could manage with it." While they are not as yet ready to install new machines as the American is, they certainly have gotten over their hesitancy of changing their management methods. Temperamentally, the Englishman takes naturally to job analysis. He is not in as big a rush and hurry as the average American. He is very persistent. What he does he does for a permanent result. As an illustration: One rides in many automobiles eight or ten years old which are running as noiselessly and efficiently as when they were built. Today, few American machines of ten years ago are even operating.

A few years ago in England one heard a great deal about the limits of production which the unions allowed;—so many bricks layed a day was the limit of the bricklayer, etc. Employers today are not submitting to these limits. They have, up to today's time submitted to the rate of pay, but they are insisting on a greater production for this pay. Of course, some factories have gone ahead very much faster than others. As an example, one city I was in has a shoe factory run with American machines and using American methods. It was paying the same scale of wages as in America, was running full and was some weeks behind on its orders. A number of other shoe factories in the same city operating on English standards were running short time for lack of business, and were absolutely unable to meet the cost of the first mentioned factory. Such successful illustrations as these are leading the English people to overcome their reluctance to change their methods. We may expect them to be strong supporters of scientific management and eventually to give us very strong competition.

NEXT MEETING
Philadelphia, March 16 to 18

REVIEWS

Graphical Methods for Schools, Colleges, Statisticians, Engineers and Executives. By William C. Marshall, New York, McGraw-Hill Book Co., 1921, Pp. vii, 253.

So little material is as yet available concerning methods of graphic presentation that any new book on the subject can hardly fail to be of considerable real service to the business world. Under these conditions "Graphical Methods," by William C. Marshall, cannot be viewed otherwise than as a valuable addition to the limited number of pioneer works in its field. At the same time, from the standpoint of the business statistician, the book is somewhat of a disappointment in that it covers so little new ground and contributes so few original ideas. As a matter of fact, the author has set himself an impossible task in endeavoring to cover the many phases of the subject, mathematical and non-mathematical, in 220 pages and in attempting in one volume to meet the different needs of "schools, colleges, statisticians, engineers and executives." The result is necessarily a fairly superficial treatment of numerous important topics.

Indeed, in so far as the book is intended for business executives of the class of corporation officers, it fails in its purpose. In any industrial organization of such size that the use of graphic methods is not only desirable but has become essential to effective administration, the executives are not likely to be able to afford the time, and frequently lack the technical knowledge, to study and to understand more or less complicated charts involving factors which, from their standpoint, are matters of comparative detail. Such matters are properly left largely to departmental managers. Briefly, what the executives primarily desire, as a basis for administrative action, are simple and accurate graphic pictures of the movements of the *significant* broad elements of the business. In order to meet this need, careful statistical analyses must first be undertaken to determine what trends, ratios and facts are really significant; then the problem becomes one of graphic presentation designed to "make the statistics talk" in a language which will be readily understood, and cannot be misunderstood, by the particular executive or group of executives for whom the graphics are intended.

There is, however, very little in "Graphical Methods" which will be helpful either to this class of business executives or to those of their subordinates whose duty it is to satisfy executive wants. An engineer himself, Mr. Marshall has devoted more than one-half of his text to engineering problems and to other applications of graphic methods which are in the nature of technical tools rather than administrative aids. Moreover, the illustrations, a most important element in any book of this kind, are for the most part poor examples of effective graphic presentation, and are also generally of such special nature as to be of little value in suggesting new methods to the executive.

In short, while the author states (p. 6) that "business executives cannot afford to ignore the merits of graphic representation which have for so long been accepted by the engineer and man of science," the book offers little assistance to the business executive, as distinguished from the engineer or department manager, in explaining or suggesting how graphic methods may be applied to his own special problems.

S. L. ANDREW,
Chief Statistician, Am. Tel. & Tel. Co.

Bibliography of Industrial Efficiency and Factory Management. By H. G. T. Cannons, Borough Librarian, Finsbury, London. New York, 1921, E. P. Dutton & Co.

The most valuable bibliography on management yet compiled. Contains approximately 3,500 references, covering U. S. literature adequately. Divided into two parts: I—Classification under sixty-three subject headings; II—Alphabetical author index with reference to location of author in Part I.

OBJECTS OF THE SOCIETY

(Extract from the Constitution)

The objects of this Society are, through research, discussion, publication and other appropriate means:

1. To secure an understanding and intelligent direction of the principles governing organized effort for the accomplishment of industrial and other social purposes for the mutual benefit of

A. The Community
B. Labor
C. The Manager
D. The Employer

2. To secure the gradual elimination of unnecessary effort and of unduly burdensome toil in the accomplishment of the work of the world.

3. To promote the scientific study and teaching of the principles governing organized effort, and of the mechanisms of their adaptation and application under varying and changing conditions.

4. To promote general recognition of the fact that the evaluation and application of these principles and mechanisms are the mutual concern of the community, labor, the manager and the employer.

5. To inspire in labor, manager and employer a constant adherence to the highest ethical conception of their individual and collective social responsibility.

MEMBERSHIP

Members are elected by the Board ot Directors. Application must be made on a form which may be secured of the Managing Director. There are five classes of members:

1. Honorary Member: Elected for distinguished service in the promotion of the science of management.
2. Senior Member: Thirty years of age or over; connected with organization, management or management engineering, as one in responsible charge of installing methods, as executive, as social scientist, or as teacher. (Initiation fee, $15; Annual dues, $15.)
3. Associate Member: Twenty-five years of age or over; interested in cooperating in the work of the Society toward the advancement of the science of management. (Initiation fee, $15; Annual dues, $15.)
4. Junior Member: Twenty-one years of age and not over thirty; experienced in subordinate functions of management or management engineering or graduate of a school of engineering, business administration or commerce of collegiate rank. (Initiation fee, $5; Annual dues, $5.)
5. Sustaining Member: Individual, firm, corporation or organization so interested in the advancement of the science of management as to wish to promote the work of the Society by annual contribution; privileged to designate two individuals who shall be entitled to all the rights and privileges of members (including receipt of the Bulletin) except to vote and to hold office. (Dues, $35.)

A MANAGEMENT ENGINEERS' CREED

The sublimest duty of the engineer is to keep the faith:

The faith of the client that he will not undertake what he knows to be beyond his ability; and that with respect to what he undertakes he will give conscientious service to the limit of his ability;

The faith of his fellow engineers that he will remain true to his science and will magnify and not cheapen it; and that he will base his efforts for public recognition upon ability, scientific attainment and actual performance, and not upon ambiguous self-laudation;

The faith of the community that he will undertake no service inconsistent with the public welfare; and that in service consistent with the public welfare, but in which the interests of groups appear to come in conflict, he will judge carefully and sympathetically the claims of rival interests, and attempt to establish that unity of purpose which promotes the public welfare.

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